

Railway Age

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Small Fuel Savings Count

IN considering the subject of fuel economy at railway power plants, railway officers sometimes make the mistake of seeing only the large improvements necessary which involve considerable expenditures of capital. The fact of the matter is that in most power plants, *large* economies can be made by the proper attention to *small* details of design or operation needing correction. For example, the stoppage of air leaks in boiler settings, the insulation of boiler drums and steam pipes, the application of soot blowers, steam traps, etc., cost little and yet save many barrels of oil or tons of coal in a year. One of the short but important articles published elsewhere in this issue is entitled "Fuel Economy at Southern Pacific Power Plants." This article describes in some detail the improvements and economies affected at the Southern Pacific locomotive terminal power plant at Houston, Texas. When the work on the 94 other stationary boiler plants of the Texas Lines is completed, it is anticipated that a saving of at least \$125,000 a year will be accomplished with an expenditure for minor improvements not exceeding \$25,000. This is worth while economy and should encourage a prompt tightening up in the operation of all railway power plants from a fuel consumption standpoint.

A "Bawling-out" from Hank

ONE morning not many weeks ago a suburban train headed toward the metropolis made its regular stop at a suburban station. It came to a halt, however, about two car-lengths short of its usual place and a group of commuters who use this train regularly and who always station themselves on the platform where the car which they generally ride in, a smoking car, stops, found themselves some distance from this car. The train never stops at this station more than a few seconds, so those who do not board it at the steps nearest them are obliged to clamber on after the train is in motion. What happened in this case? Well, naturally commuter-like, to save themselves the walk through two cars, they decided to get on their car as it passed them after the train had started. They edged slowly to the platform, talking and laughing, when suddenly one of them said, "Boys, we'd better get into this car right away; if Hank sees us piling on after the train starts he'll give us a good bawling-out." As one man the whole group climbed aboard at the nearest entrance, the last man just getting on the bottom step as the train started. They walked through the cars to their smoker. Not only had they saved themselves a "bawling-out" from Hank; they had perhaps also avoided injury or death to one or more of their number. Moreover, they had taken an important step in acquiring the "safety habit"—the habit which makes its fortunate possessor constantly place safety above temporary convenience. But who was this man Hank, the fear of a "bawling-out" from whom led these commuters—middle

aged, prosperous business men for the most part—to choose the wise course of action? Hank was the flagman on the train. May his tribe increase; the railroads need more of him.

Further Progress in Simplification

THAT the project for simplified practices in industry fostered by the United States Department of Commerce is meeting with success is attested by endorsement which it is receiving from the manufacturers. The latest development is the action of the Concrete Reinforcing Steel Institute, an association of reinforcing bar manufacturers, in accepting as standard the eleven sizes of bars recommended by a conference at Washington on September 9, 1924, in lieu of the much greater number of sizes manufactured heretofore. This represents progress which may be given unqualified endorsement, although it is recognized that the application of this or any other plan of simplification will be attended by some temporary hardships. For example, many of the railroads have considerable investments in standard designs of reinforced concrete structures which call for sizes of bars other than those included in the recognized list recently adopted and they will be put to some inconvenience and expense in revising plans. But after all, is any progress made without some sacrifice? If any further comment is called for, it is that standardization has not gone far enough. The field of the track structure is almost untouched. Why must manufacturers of switch stands be required to furnish a different pattern of target for each railroad? Why must each road have its own design of claw bar?

What Can Foreign Railways Teach Us?

IT is regular practice for the railways of some countries to send certain of their officers abroad each year to observe and study railway methods in other countries. There is one country—we shall not mention any names—which has almost always a dozen or more of its railway officers on this continent studying railway methods. However, this country of which we speak has no monopoly on the practice. Railway officers from many different countries are constantly coming to these shores to study some phase of our railroad methods—signaling, dispatching, yard operation, statistics and accounting, high-capacity cars, locomotives, shops and so on. But are there as many American railroad men who go abroad to study railway methods as there are foreigners who come here? It would be rather difficult to gather accurate statistics, but our guess would be in the negative. Doubtless this is to be expected. Freed from the deadly grip of government operation such as the railways of no other important countries except England and, to a lesser degree, France, have been, and with all the facilities for great expansion, there can be

no doubt but that railroads on this continent have, generally speaking, set the pace for progress in the railway world. Still, this does not mean that nothing of value can be learned from other countries. Certainly in locomotive building this is realized, for there is a free interchange of improvements in this field between this continent and Europe, as there is also in some other phases of railway work. But is it not reasonable to assume that in other fields as well closer contact between railroad men of various countries would be mutually advantageous? In certain congested areas of this country passenger traffic is assuming the relatively greater importance characteristic of the English railways. Most American roads find that much of the short-haul passenger traffic handled at reduced rates does not pay. In England, on the other hand, at least one railway finds such business sufficiently remunerative to warrant extensive advertising aiming to increase this traffic. Might not careful investigation bring out the reason for this difference? The European countries are faced with truck and bus competition the same as we are here. They have their labor problems, too. Would it not be good business for the American railroad officer to have a first-hand knowledge of the best practice in Europe and elsewhere on the solution of these problems and others? Capable men of science are not detained by international boundaries. They maintain close relationships with each other all over the world. Could not the same close relationships be profitably cultivated by the leaders in the field of railroad science? The meeting of the International Railway Congress in London this June will give American railroad officers who attend the opportunity not only of learning something of European railway practice but also of making the acquaintance of leaders in the field from countries all over the globe.

Freight Rates on Farm Products

THE futility, or worse than futility, of the work done by most temporary government commissions is illustrated by the preliminary report made last week by the agricultural commission appointed by President Coolidge. It has been hoped that this commission would actually investigate agricultural conditions, and to the extent to which it found them unsatisfactory recommend constructive measures adapted to improve them. What the commission said regarding freight rates on farm products shows that it did not investigate the facts about them at all, or that it deliberately put into its preliminary report statements and recommendations expressing certain widespread beliefs and prejudices which are not founded on facts. If the recommendations made by the commission regarding freight rates are a sample of what all of its recommendations are going to be its labors will be worse than valueless.

The commission had certain things to say about freight rates on farm products in general and, in addition, some things to say about the relationship of freight rates to the situation of the livestock industry, and especially the cattle industry. "By reason of the horizontal changes in freight rates during recent years," it said, "and of greater depression of prices of agricultural products than of those of other products during the same period, the raw products of agriculture are now bearing a relatively excessive cost for transportation."

The purport of this sentence is wholly incorrect and misleading. Almost on the very day that the agricultural commission made public its preliminary report the Bureau of Labor Statistics of the Department of Commerce issued a report showing the general level of wholesale prices in

December, 1924, as compared with December, 1913. This report contained the accompanying table:

INDEX NUMBERS OF WHOLESALE PRICES, BY GROUPS OF COMMODITIES
(1913 = 100.0)

Group	1924		
	December	November	December
Farm products	144.6	149.5	156.7
Foods	146.9	153.8	157.9
Clothes and clothing	203.3	190.4	191.4
Fuel and Lighting	162.2	162.8	164.4
Metals and metal products	141.6	128.7	132.9
Building materials	178.3	171.6	175.1
Chemicals and drugs	130.3	134.0	134.6
House furnishing goods	176.4	172.0	172.4
Miscellaneous	116.4	122.9	128.6
All commodities	151.0	152.7	157.0

The commodity price statistics of the Bureau of Labor Statistics are accepted by the Department of Agriculture and republished in the monthly reports of the latter. The statistics given in the accompanying table show that in December the average wholesale price of all groups of commodities was 57 per cent higher than in December, 1913, and that the average wholesale price of farm products was 56.7 per cent higher. Therefore, the only thing that could make true the commission's statement that farm products are now bearing a relatively excessive cost of transportation would be that freight rates upon farm products had been advanced more than upon other commodities. But the opposite is true. In October, the latest month for which the average freight rate per ton per mile of all the railways is available, it was 55.1 per cent more than in 1913. It will therefore be seen that the increase in it has been less than either the increase in the average wholesale price of commodities as a whole or than the increase in the average price of farm products.

But that is far from being the entire truth. Rates were advanced horizontally upon all commodities in each of the three large territories of the country in 1918 and again in 1920. They have been reduced since then, but not "horizontally." In 1922 freight rates were reduced 10 per cent upon all commodities except grain and grain products. On wheat they were reduced 16 per cent and on coarse grains 21 per cent. Now, grain and grain products constitute one-half of the tonnage of all farm products, and therefore the average reduction in the rates on all farm products was 13 per cent.

Nor is this all. The largest advances in rates since before the war have been made in eastern territory. Now, 50 per cent of the entire tonnage of farm products is handled in western territory where the average freight rate is now only 37 per cent higher than in 1913, and 14 per cent of the tonnage of farm products is handled in southern territory where the average increase in rates has been only 39 per cent. Furthermore, the average distance all commodities, including farm products, are carried in western and southern territory is 50 per cent longer than in eastern territory. Taking into consideration all these factors it is found that at least three-quarters of the ton mileage of freight service rendered in handling farm products is rendered in the western and southern territories, where the advances in rates have been less than in the country as a whole, and that the average increase in the rates on farm products since 1913 has been not more than 48 per cent and probably only about 45 per cent.

To sum up, then, the increase in the average wholesale price of all commodities has been 57 per cent; and the increase in the average freight rate on all commodities about 55 per cent. The average increase in the prices of farm products has been 56.7 per cent and the average increase in the freight rates upon them not more than 48 per cent. Did the members of the agricultural commission have these facts before them when they prepared their preliminary report? If not, why not? They were available in Washington where the commission met. If they

had them, upon what information or theory did they base their conclusion that farm products are bearing more than their share of the cost of transportation?

The commission's intimation that the livestock industry generally is in bad shape is unwarranted. A report of the Department of Agriculture dated January 1 shows the following facts regarding "actual prices received at the farm by producers": Between November, 1913, and November, 1924, beef cattle declined from \$5.99 to \$5.43 per 100 lb.; hogs increased from \$7.33 to \$8.62; veal calves increased from \$7.70 to \$7.89; lambs increased from \$5.64 to \$10.63; and wool increased from 15.6 cents (per pound) to 40.1 cents. Hogs sold still higher in October, the farm price being \$9.45. These figures show that it is only cattle producers that are suffering severely from low prices.

A study made by the National Livestock Producer's Association showed that in 1923 out of every dollar paid for livestock at the large markets the producer received 93.55 cents and the railroads 3.78 cents in freight charges, while other marketing costs were 2.67 cents. A more recent study made by the Bureau of Railway Economics indicates that out of every dollar paid at the large markets for cattle and calves in October, 1924, the producer received 91.4 cents and the railroads received 5.8 cents in freight charges, while other marketing costs were 2.8 cents. It is quite evident from these figures that no reduction of rates on cattle that conceivably could be made would be of much value to cattle producers even if they received the full benefit of it.

The cattle producer is in relatively the same position that the wheat grower was a year ago. His troubles are due, not to high freight rates, but to low prices; and they can be remedied only by an increase in his prices. Why did not the agricultural commission say so and offer some constructive suggestions for the solution of the cattle producer's real problem; instead of taking the "easiest way" and appealing to his prejudices and that of other farmers regarding freight rates?

Neither the present prices of farm products, the net return the railways are earning nor any other condition offers the slightest justification for the recommendation made by the agricultural commission regarding freight rates on farm products. The conclusions reached by it after a few weeks' consideration are directly contrary to those reached by the Interstate Commerce Commission after constant study of the subject for months and years. Probably the true reason for the difference is that the Interstate Commerce Commission actually has studied the subject, while the agricultural commission has not, but has been satisfied to repeat the same kind of buncombe about freight rates on farm products that certain discredited politicians have been disseminating for four years.

More Planning Needed

TO what extent is it possible for a large railway so to plan and schedule its routine maintenance of way work in advance as to enable all operations incident thereto to be co-ordinated with the minimum lost motion? This question is receiving increasing attention of late because of the growing realization that the present common lack of a specific program or schedule is resulting in losses in the utilization of labor and in the handling of materials that mount to large figures in the aggregate. Consider the handling of the routine repair and reconstruction of timber bridges as an example. The use of treated material for this purpose is becoming more common, making it imperative that the mutilation of this timber after treatment be reduced to the minimum by

framing each stick for its specific use as far as practical, a development which is as yet in its infancy.

At the present time it is customary on most roads for the bridge department to prepare a list of the work to be done on its structures during the following season from the information secured on its annual fall inspection and from this to make up a consolidated bill of its timber requirements for the season, for the system, subdivided in some instances for each division but seldom showing the material for a specific structure. This bill of material, which is sent to the treating plant, is general rather than specific in character insofar as the requirements of any particular structure of normal dimensions are concerned. The timber is then treated largely in standard dimensions without reference to specific structures, the entire season's requirements being put through the plant as rapidly as possible in order that the material desired in April may be available, although it is known that it will not be possible for the bridge gangs to use a portion of the timber until late in the fall. In the absence of specific allotments, however, the purchasing and timber treating officers have no alternative but to buy and prepare the entire requirements, thereby increasing the investment and frequently the cost of treatment unnecessarily.

After the timber is treated it is then commonly shipped to a general or division storeyard where it is unloaded and placed in stock. Later in the season this material is shipped out to various jobs where again the common practice is for the supervisor in charge of the field work to specify the date of delivery sufficiently in advance of the time when he desires to use it to be sure that it will be there when needed and actually to require the sending of a gang to unload the material if it arrives at the point of use on the date specified. All of these steps lead to waste, resulting from the lack of preparation of a definite program and adherence to that program.

As an indication of what can be done if proper efforts are made, the Midland Valley has found it possible to prepare a program of its bridge repair work late in the year for the following season in sufficient detail to enable it to give the plant which treats its timber a schedule showing the number and dimensions of the sticks to be treated for each structure, including considerable framing, and the date on which the material for each structure should be shipped from the plant to enable it to arrive at the point of its use only a few days prior to the arrival of the gang. This program has been worked out with such accuracy and has been adhered to by the forces so closely that in September of last year the gangs were only two days behind the schedule prepared for them the preceding December. As a result of strict adherence to this program the timber treating plant is enabled to arrange its operations for the maximum economy, the investment in timber is reduced to the minimum, unnecessary handling is eliminated and the bridge gangs are enabled to proceed with their work with the assurance that material will be available for them when needed.

It may be said that the Midland Valley is a small railway and that a plan such as this would not be applicable to a large railway. However, the Midland Valley corresponds to a division on a large railway and the program of work of this character is made up on the larger systems by divisions. It should be possible, therefore, for each division to approach the accuracy of the plan of the Midland Valley in scheduling its operations, while the aid which the treating plant, which in this case is a commercial plant, secures from its ability to prepare an orderly schedule of treating operations corresponding with the use of this material in the field should accrue to even greater advantage on a large railway whose requirements are greater. This subject deserves serious consideration from railway executives, maintenance and

purchasing officers, for the economies which will result from the orderly preparation and adherence to a program are not confined to those referred to here, but will be reflected in increased efficiency in other directions, including the more orderly direction of forces.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Address by Daniel Willard, President, Baltimore & Ohio Railroad, before the Chamber of Commerce, Akron, Ohio, January 8, 1925. 8 p. Publisher not given, but probably available from Baltimore and Ohio Railroad Co., Baltimore, Md.

Automatic Couplings and the Safety of Railway Workers. Report on Statistics of Accidents Due to Coupling and Uncoupling Operations, by International Labour Office. Report covers 14 European countries, India, United States and Canada. 62 p. Pub. by International Labour Office, Geneva, Switzerland, but copies available in United States from World Peace Foundation (I. L. O. agents), Boston, Mass. 20 cents.

A Statistical Review of the Railroad Year, 1924, by Julius H. Parmelee. Reprinted from *Railway Age*, January 3, 1924. 24 p. Pub. by Bureau of Railway Economics, Washington, D. C. Apply.

Periodical Articles

Canal Traffic for Calendar Year 1924. Statistics of Panama Canal. Panama Canal Record, January 7, 1925, p. 309-311.

Creosoting of Material as Relating to Constructive Engineering, by Richard V. Look. History of methods used to preserve ties, poles, etc. Engineering Journal [Canada], January, 1925, p. 10-15.

Current Freight Rates on German Railways, by Margaret L. Goldsmith. Includes also table of freight rates on six commodities in 11 European countries. Author is Assistant U. S. Trade commissioner at Berlin. Commerce Reports, January 19, 1924, p. 154.

Is Electricity Better Than Steam? by R. H. Selbie. Discussion of suitability of electricity and steam for heavy suburban passenger service. Modern Transport, January 10, 1925, p. 5.

The Price Balance Between Agriculture and Industry, by Charles J. Brand. "If reduction of [freight] rates is undertaken—and it seems possible that this might be done as to specific farm products without the necessity for denying good transportation service—great caution must be exercised lest the transportation industry be projected into a distress similar to that of agriculture." p. 28. Proceedings of the Academy of Political Science, January, 1925, p. 9-35.

Railway Outlook an Indicator of General Prosperity, by Charles W. Foss. "The carriers are the largest users of three of the nation's four leading basic commodities, steel, lumber and coal, and in 1923 and 1924 spent \$3,000,000,000 yearly." Annalist, January 19, 1924, p. 126, 128.

Introducing Mr. L. Warrington Baldwin, by A. St. John. Sketch of President of Missouri Pacific. Barron's, Jan. 12, 1925, p. 11.

Letters to the Editor

An Earlier Claim for Heavy Rail

NEW YORK CITY.

To THE EDITOR:

For the purpose of historical accuracy, after reading the articles appearing in the *Railway Age* of September 27, 1924, page 533, and December 27, 1924, page 1154, regarding the first use of T-rail of heavy section, I desire to call attention to the fact that the Central Railroad of New Jersey designed a 135-lb. rail section in 1909 which it first began laying in the following year. It continued to install rail of this weight until about four years ago when it adopted in lieu thereof the 130-lb. R. E. section. This 135-lb. rail was rolled for a number of years, commencing in 1910, by the Pennsylvania Steel Company (now the Bethlehem Steel Company) at Steelton, Pa.

We believe that the 135-lb. rail which we began laying in 1910 was the heaviest section of T-rail that had been laid in steam railway tracks up to that time.

C. H. STEIN,
General Manager, Central Railroad of New Jersey.

Misleading Information About Railroad Patents

NEW YORK.

To THE EDITOR:

A news item in the New York Times of January 2, 1925, entitled "Insists Inventions Find Ready Market," which refers to a discussion between Orson D. Munn, and Professor Reginald A. Fessenden, as to the adoption of inventions, contains the following incorrect statement of fact, relative to the railroads, which is so misleading that it should be corrected.

In the item referred to, Mr. Munn is quoted as making the following statement, viz.:

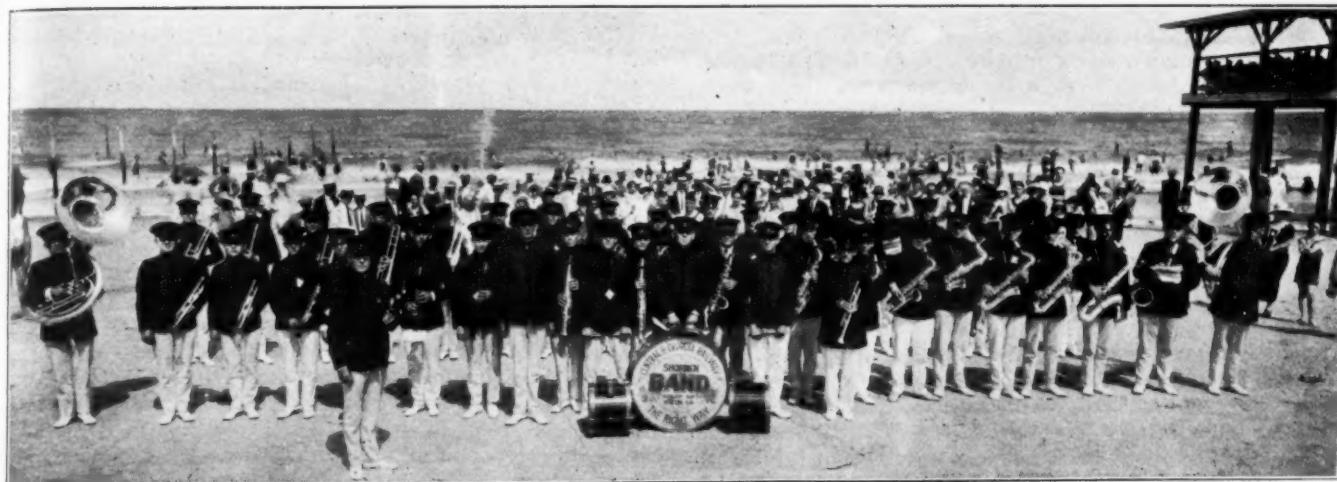
"The average executive, of course, is not able to pass upon the technical merits of the proposed innovations, so the roads have combined to form a joint organization for the express purpose of entertaining new ideas. If you, as an inventor, have a proposal you think ought to be adopted, this board will be more than glad to consider it. Your invention doesn't even have to be perfected. If your idea looks good, this organization will perfect it, and if it's to the advantage of the railroads, will urge its adoption."

As a matter of fact, no such "joint organization" has been formed by the railroads, and if one exists, which in view of my active connection with railroad business I do not think is probable, the railroads have no connection whatever with it.

The Eastern Railroad Association, with offices in Washington, D. C., and Western Railroad Association, with offices in Chicago, Ill., were organized by the railroads, but their functions are strictly limited to the determination of such questions of infringement of patents as may be submitted to them by their members.

It is not within the duty or the practice of either of these associations to act in "entertaining new ideas," as to unpatented inventions; to "perfect" such an invention; or to "urge its adoption."

J. SNOWDEN BELL.



Central of Georgia Shop Band at the Annual Picnic of the Clerks at Tybee Island, Near Savannah

Co-operation—Not an Idle Dream

*Concrete and practical results can be clearly traced on the
Central of Georgia Railway*

By Roy V. Wright

MANY enthusiastic commendatory expressions have been received by the *Railway Age* over the outcome of the competition for the best articles on co-operation in the interests of railway efficiency, which was held last spring. The two prize articles and several others have been published during the past seven months.* Others, which present different points of view or which contain suggestions not already touched upon, will appear in future issues. It must be admitted, however, that comments have also been received which were not quite so favorable—indeed, it has been suggested by one or two persons that except for one of the contributions which is credited with being eminently practical, the articles have been too largely theoretical or idealistic. Regardless of whether we agree or disagree with this criticism, it may be profitable to select one road from which a large number of contributions were received and which has a considerable reputation for the spirit of co-operation among its employees, in order to see just what is being done to promote co-operation and what concrete results, if any, are evident. It is questionable if results may be regarded as really worth while if, figuratively speaking, it is necessary "to use a compound microscope to find them."

The Central of Georgia Railway was selected because 25 contributions were received in the competition from employees of that road. This number was exceeded on only three other systems, the Pennsylvania with 44 contributions, the Southern Pacific with 42, and the New York, New Haven & Hartford, 35.

* A story about the competition appeared in the *Railway Age* of June 21, 1924, page 1755. The first prize article was printed in the *Railway Age* of June 28, 1924, page 1805, and the second prize article in the *Railway Age* of July 12, 1924, page 51. Other articles entered in the competition, or based upon the competition, will be found in the *Railway Age* of July 26, 1924, page 153; August 9, page 235; August 23, page 323; September 6, page 411; September 13, page 453; September 20, page 491; October 11, page 633; December 27, page 1175. A series of three articles by one of the judges in the competition, Dr. H. C. Metcalf, director of the Bureau of Personnel Administration, and based on a careful study of all the contributions to the competition, will be found in the *Railway Age* of November 29, 1924, page 982; December 6, 1924, page 1016, and December 13, 1924, page 1062.

In attempting to determine the practical results from co-operation, where shall we start from, or rather what shall we consider as the dividing point between the old and the new? This, of course, may vary on different railroads, but particularly in the case of the Central of Georgia we may consider it as March, 1920, when after the period of federal control, the roads were handed back by the government to their owners. There has been no great change in the management of the Central Georgia since that time. W. A. Winburn had been its president since April 8, 1914, and was federal manager during the period of government control. He continued as president after the return of the road to its owners in March, 1920. At that time L. A. Downs, who succeeded Mr. Winburn at his death, on January 8, 1924, became connected with the road as its chief operating officer.

What has taken place on the Central of Georgia during the past four or five years—not forgetting, of course, that it, like all the other roads, was involved in the shopmen's strike in 1922?

The Chief Executive's Attitude

It is essential to the development of a spirit of teamwork or co-operation in an organization that the chief executive shall not only be clearly and positively in sympathy with it, but that he shall be a source of inspiration and a leader toward that end. The Central of Georgia has an employees' magazine, "The Right Way Magazine"—it is quite appropriately named. In its July number there were a number of pithy paragraphs, one of which read as follows: "When a man begins to tell you his troubles, it is time to look at your watch and recall an important engagement." A significant sidelight on the character and attitude of the president may be obtained from the prompt and vigorous way in which he reacted to this statement. The very first article in the next issue of The Right Way Magazine was entitled "Our President Objects."

President Downs said: "I realize that you were writing

in a light vein when you said this, but nevertheless I take exception to it.

"I like for men to feel free to tell me their troubles, and I always find time to listen to them and help them if I can. Everybody who works for the Central of Georgia is a member of one big family. I wish none of us had any troubles. There are nearly 10,000 of us, and dark days come into the lives of all. In a family the misfortune of one is a matter of concern to Father, Mother, Brother and Sister. The same thing is true on the Central of Georgia.

"Every officer is sincerely interested in the welfare and happiness of every employee. Any man or woman who is in trouble need not hesitate to approach his immediate superior, his department head, or any other representative of the road and talk freely about the things that are in his mind and heart.

"Two heads are better than one, and often advice or suggestions will help over the hard places. If nothing else results, there is always the relief that comes to a fellow

individual welfare. These indicate an intimate, personal interest of the chief executive in the progress and happiness of each one of the 10,000 employees. For instance, one of these letters, dated January 1, 1924, was entitled "Why Not Own Your Own Home?" Part of this letter follows: "There is nothing that affords more genuine satisfaction and contentment than the feeling that your home belongs to you. The first step is to save enough money to purchase a lot, and the way to do that is by a systematic setting aside of a fixed sum each pay day. With the money for a lot in the bank there are reputable real estate agencies, building and loan associations and other organizations in nearly every town that will assist you in building a house or in arranging for the purchase of a home on easy payments. This usually means little or no greater burden to you than the payment of rent. The difference is that at the end of a few years—and time passes quickly—you will have a house and lot that belong to you, instead of a bundle of rent receipts.

"I know from experience what I am talking about.



Young Visitors to the Savannah Shops During Boys' Week

from getting it out of his system by talking it all over with a sympathetic listener.

"That is what friends are for—not just for fair weather and fun, but for the hand upon the shoulder and a lift when the road gets rough. I want again to assure all the employees of the Central of Georgia that I am their friend and what interests them interests me, and the other officers all feel the same way about it. This goes in time of trouble just as much as when the employees are making efficiency and economy records or doing something else that every one is proud of.

"So let's get this straight: Whenever any member of the Central family has troubles to tell, there will be an outstretched hand, but it will be one of sympathy and helpfulness. There won't be any watch in it, and it won't be attached to any cold shoulder."

The employees of the Central of Georgia look with great interest to occasional letters from the president containing pertinent and helpful suggestions concerning their

For nineteen years I was one of the neglectful victims of the rent habit. I paid out money to the landlord month after month for all of those years and at the end of that time all I had to show for it was a pile of cancelled checks. When I came to Savannah, four years ago, I determined that things would be different from then on. I confess that I had not saved a great deal of money, but I was able to borrow some and to make a start toward getting a home of my own. I am my own landlord and I am getting the benefit of the money that I am putting aside every month. My own experience in home-owning vs. rent-paying and my sincere interest in your welfare have moved me to write you in the hope that you may make a start toward getting under your own roof. Won't you give some consideration to this matter? Talk to your family, your real estate man and your 'boss' about it. Write me if you have any difficulty in getting the information you want, or, better still, advise me what progress you are making, but make a start and do it this year."

The file of letters received in reply to this New Year message indicates that it struck home. This is further shown by the illustrations of homes of the employees in The Right Way Magazine, many of recent construction.

Ten Cents of the Dollar

Other letters in the series touch upon such things as qualifications for promotion and thrift. The latter letter is entitled "Ten Cents of the Dollar," and includes the following significant paragraphs:

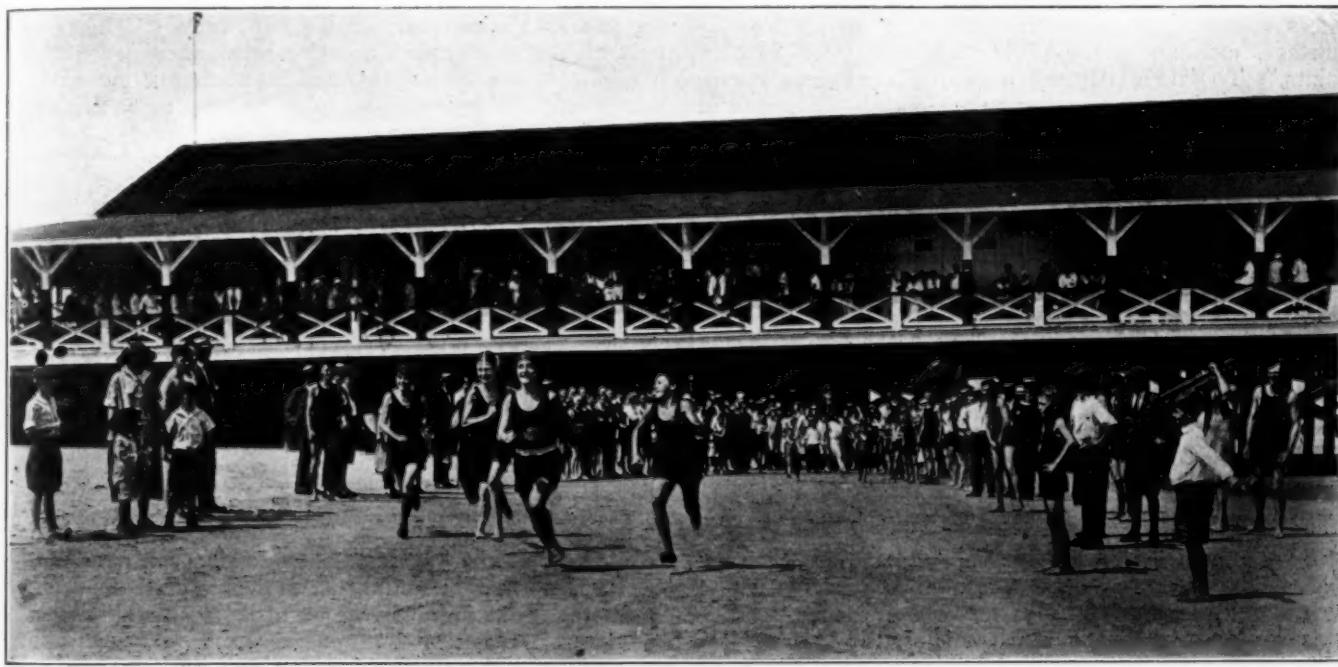
"James J. Hill, who was a wonderful railroad man, and who had a wise understanding of human nature, once said that a man who could not save money was never really successful. He measured true success not alone by the ability to earn, but by the ability to save, which is often harder to do.

"But saving is not so hard as to be beyond the reach of any of us. An officer of the Central of Georgia told me the other day that when he was a boy his father taught him this motto: 'You can have just as good a time on 90

with your immediate superior. You will find him sympathetic and helpful. Do not get in the clutches of loan sharks who care nothing for you and who are anxious only to get your money. In case you are already doing business with a loan shark* write me a letter about it and I may be able to suggest a way out.

"The company and each of its officers is your friend. We try to provide continuous employment at fair rates of pay. We do not consider you as so many machines to turn out work. We want each of you to enjoy health and happiness, and to get the most out of life. That is why I am urging you to save money while you can. You will find it well worth while. Start the '10 cents out of each dollar' saving plan next pay day, and write me a little later how you are getting along."

The response to this letter was most gratifying and interest in it is being manifested in many ways. The big shops at Macon, Ga., have a splendid band of 50 or more pieces. Most of its members did not know how to play an instrument 18 months ago; but by hard work and under



The Shopmen's Picnic at Typee, Near Savannah, Was Featured by Athletic Events

cents as on a dollar' so he has made it a rule all his life to save 10 cents out of every dollar he gets. When you look at saving in that simple way it does not seem difficult.

"Any method of saving you adopt is good, but it is well to avoid keeping money at home where it is too easy of access to yourself and others. Perhaps the savings bank is best. Put a little money in the bank each pay day; get it to work drawing interest; make friends with your banker; get his advice to an investment when you have accumulated a hundred dollars or more. Do this and you are started on the right road.

"If, through misfortunes, like illness or any other reason, you get behind in your finances, talk matters over

the direction of a most capable and enthusiastic leader, it has developed to a point where it is greatly in demand not only in Macon, but in the neighboring cities. The president is very much interested in it and when in Macon on practice days, tries to find time to slip out to the shops to see how it is getting along. It was a most interesting experience a few weeks ago, at the close of the day, to listen to this band as it practiced out in the open alongside the cab shop. A considerable group of employees was enjoying the practice program when the president quietly joined them. Two or three of the young lady employees started to chat with him and in a very few minutes were telling him with much enthusiasm of the steady rate at which their savings accounts were growing.

"Best Railway in the World"

There was a time when railway employees generally in this country spoke enthusiastically of "our railroad" or "my railroad." It must be admitted that such expressions today are the exception rather than the rule. The unanimity and enthusiasm with which Central of Georgia employees designate that road as "the best railway in the

* Mr. Downs received a number of letters from employees who were in the hands of loan sharks and a constructive piece of work has been done in helping the men to free themselves from these encumbrances. The mental distress of those whose financial affairs are badly entangled is almost always reflected in their work and in their home relations as well. The method by which matters of this sort are handled is somewhat as follows: The president sends a letter of sympathy and good advice to the man in difficulty and refers him to his immediate superior; at the same time a copy of the letter is sent to this officer, who sets about doing what he can to secure relief for his subordinate. The problem is naturally simplified because the loan sharks are breaking the law and ordinarily reasonable adjustments can be secured by dealing with them firmly.

world" is quite remarkable, and is another concrete evidence of the splendid spirit of teamwork and co-operation which dominates it.

An example of the practical expression of this interest and enthusiasm for the railroad is the voluntary formation of various employees' soliciting associations. Reports of business secured through the co-operation of members of these associations appear in The Right Way Magazine each month. The report of the association at Macon for a recent month, for instance, shows business secured through the co-operation of a great variety of employees, including among other classes the following: switch engineer, brick mason, car repairer (30 cars of sewer pipe), car inspector, co-operative student, boilermaker, colored helper (15 passengers), locomotive carpenter helper, electrician, machinist, pipe fitter, frog man, blacksmith, clerk, pensioner, etc. An examination of these monthly reports over a period of time indicates that these voluntary organizations are functioning in an active and progressive manner.

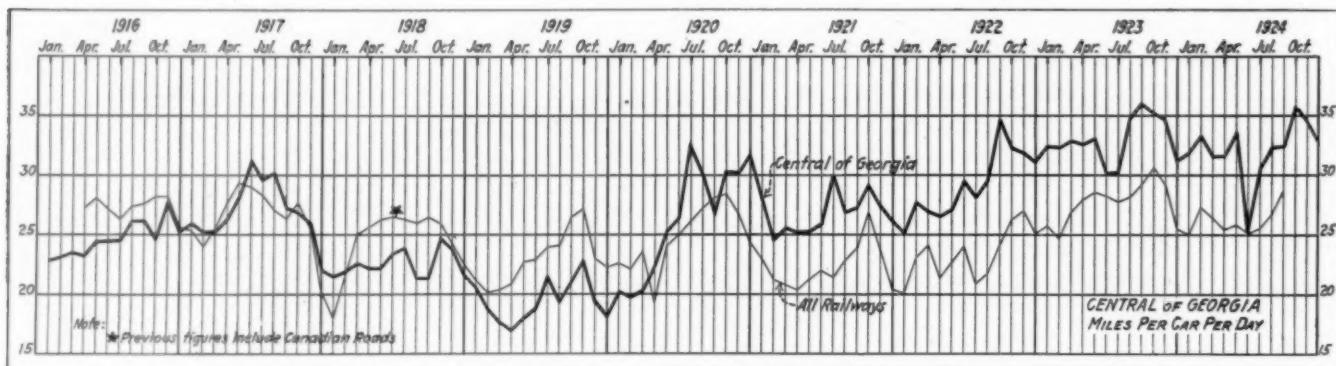
This is possibly inspired to a large degree by a series of letters from the president, emphasizing such things as courtesy, etc., and monthly bulletins entitled "Talking Points." To date 45 of these bulletins have been sent out. They include information about the Central of Georgia in

it is interesting to note the extent to which the colored employees are recognized in the employees' magazine.

It must not be inferred from what has been said that contact of President Downs with his co-workers is solely by means of correspondence and printed matter. He is democratic and approachable, but if you want to see him at his office at Savannah you will ordinarily find him there only on Saturday or Monday. Although the road is not a long one—less than 2,000 miles—the president spends the greater part of the week traveling over it. The written and printed messages are somewhat in the form of introductions for the more intimate personal contacts with the employees on the job.

Plenty of Meetings

The Central of Georgia management believes in frequent conferences in the interests of promoting more efficient and more economical operation. These may be in the form of local, divisional or system meetings. They are intended not only to develop better methods and practices, but to promote fellowship and a better understanding among the members of the big "family." They extend all the way from local educational meetings, including officers and employees, and on such matters as fuel conservation, loss and damage to freight, or safety first,



particular and the railway situation in general, which enables the employees and the patrons of the road better to understand the conditions under which the railroad is operating and the results which it is securing. They are intended to give facts upon which to form an intelligent opinion about railroad questions.

Recent bulletins discuss such things as the effect of government ownership upon employees; rates and service; freight rates and prices of commodities; relation of car movement and efficient operation to the business interests of the country; railway legislation; the workings of the different departments of the railway; what efficient and economical operation of the railways means to the travelling and shipping public; and where the railway dollar comes from and where it goes. These bulletins are backed up and supported by a series of advertisements in the press, signed by the president, on such things as how transportation contributes to the national prosperity; why railroads are interested in tax revision; opportunities to develop the natural resources of the south; information about Central of Georgia employees; comparisons in regard to railroad rates and costs of commodities; the Georgia peach traffic, etc.

The combined result of these educational features keeps the employees, as well as the patrons, fully informed and inspires employees with a real enthusiasm for their work and the interests of the railroad. They are almost ready to fight if one questions their assertion about the Central of Georgia being the best railroad in the world—and this includes all employees, white and colored. Incidentally,

to system meetings of specialists, such as lawyers, surgeons or traffic men, and finally to the big annual efficiency meeting. The latter may be regarded as the culmination of the many smaller conferences, and a few facts about the meeting which was held the early part of last year may be of interest.

It was attended by more than 500 officers and employees and extended over two days. Exhibits in the form of graphic charts reviewed the progress of the various departments and activities for the previous year. This was also developed in greater detail by reports, as well as constructive and inspiring addresses on such matters as traffic solicitation, fuel conservation, baggage claims and their evils, personal injuries and their treatment, rough handling of freight, defective equipment, freight claim prevention, surplus supplies and materials, correct accounting, etc.

A feature of the meeting was the awards to the operating division attaining the highest efficiency in the conservation of fuel, prevention of loss and damage to freight, and prevention of personal injuries. Medals were also awarded to agents who had a one hundred per cent record in freight handling during the year. Trophies were given to the Class A and Class B agencies attaining the highest efficiency in the prevention of loss and damage to freight. Agents whose stations had had correct accounts during the previous year were placed on the honor roll. Special mention was made of those agents who had had correct accounts each month for a period of five years or more.

The conference, after thorough discussion, established

goals for the year 1924. For example, the goal for that year on loss and damage to freight was .6 per cent of gross freight earnings. The goal for fuel consumption, and these figures include all the fuel used on the locomotive both on the road and at the terminal, was in passenger service 18 lb. of coal per passenger train car-mile; in freight service 175 lb. of coal per 1,000 gross ton-miles; in switching service 125 lb. of coal per switch engine-mile. Various resolutions were also adopted by the conference as a whole, as well as by its various subdivisions.

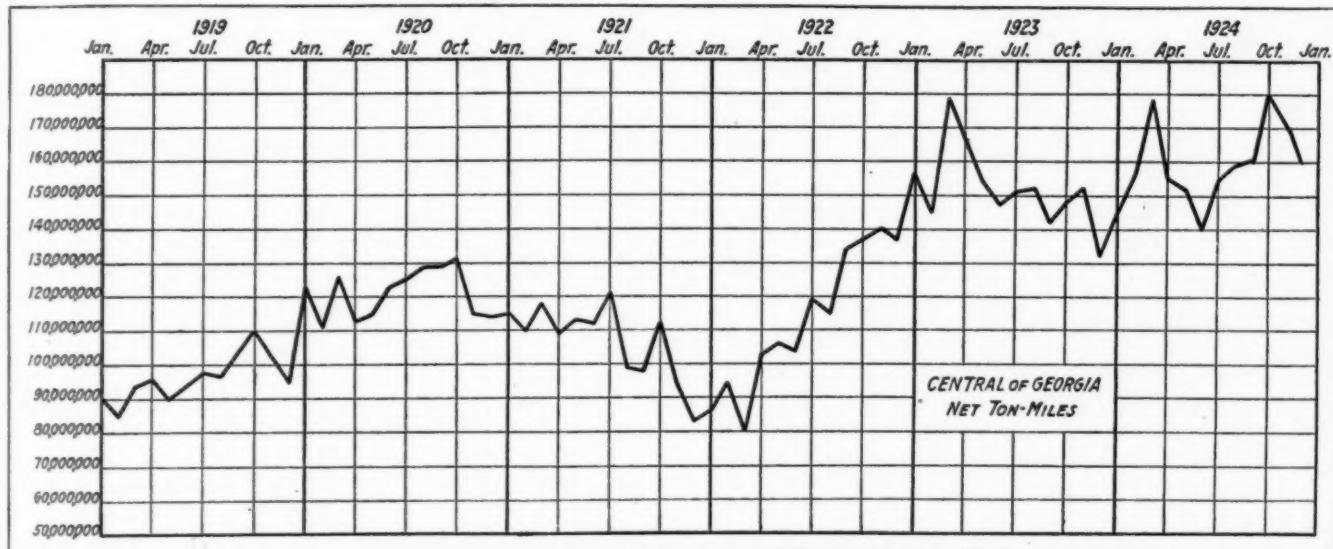
Selecting a Slogan

It is the custom at the annual efficiency meeting to select a slogan or watchword for the current year. In 1924 it was "Work and Win," W. A. W. being the initials of the late president, W. A. Winburn. The year before the slogan was "Stop the Waste." These slogans are posted prominently, are used on the company literature, and are

staff never let an opportunity go by of joining with the employees on such occasions.

Getting Down to Brass Tacks

What does all this mean in a concrete way? So many factors are involved in railroad net operating revenue that it would not be fair to ascribe definite improvement in this figure to any one factor without painstaking and exhaustive analysis. It is interesting, however, to note the progress which has been made in the last four years, as indicated by the data in the table. With a decrease in the freight rates of from 1.21 to 1.11 cents and an increase in revenue per passenger-mile from 2.82 to 3.15 cents, the total operating revenues have increased over one million dollars, the total operating expenses have decreased over four and a half million dollars and the net operating revenue per mile of road operated has been changed from a deficit of \$333 to a profit of \$2,634. This is an indication



played up in various ways in articles in The Right Way Magazine. With the goals, they form a large factor in promoting enthusiasm and teamwork.

These annual meetings sometimes take on all the enthusiasm of a national political convention. A dramatic incident occurred at the 1924 meeting, for instance, when the assistant general manager, G. L. Candler, called attention to the fact that he was formerly on the Columbus division and challenged that division, which had consistently been a tail-ender in the competition for the division trophy, to take the leadership in 1924. Grabbing a flag and jumping from the platform, he called on the members of that division to join him and led a lively and noisy procession about the hall. Horseplay, you may say, but it is producing results. The consistent tail-ender promises fair to carry off all honors, or if it fails to do so, it will be by only a narrow margin. Does it pay?

Interest in the proceedings at the annual efficiency meeting, which by the way is attended by about five per cent of the total number of officers and employees on the Central of Georgia, is further intensified by the publication of a special edition of The Right Way Magazine, which contains the proceedings of the meeting, so that all of the employees may be fully informed as to what took place.

It might be well to add, also, that picnics, outings, social events and athletics are encouraged and that they form a considerable factor in promoting friendly relationships among all of the employees and between the officers and employees. President Downs makes it a point to attend these whenever possible and the members of his

at least that the Central of Georgia has made rapid progress in getting back on its feet after federal control.

	1920	1921	1922	1923
Average miles of road operated	1,913	1,913	1,919	1,920
Total operating revenues....	\$25,082,288	\$22,057,498	\$23,286,736	\$26,198,846
Total operating expenses....	\$25,733,367	\$20,020,842	\$17,941,395	\$21,138,070
Net revenue from railway operations	\$651,079*	\$2,036,656	\$5,345,340	\$5,060,776
Net operating revenue per mile of road operated....	-\$333*	\$1,064	\$2,785	\$2,634
Average freight revenue per ton per mile—in cents....	1.21	1.31	1.25	1.11
Average tons of all freight per loaded car-mile....	24.74	23.25	22.50	24.38
Average revenue per passenger per mile—in cents....	2.82	3.13	3.13	3.15

* Deficit.

The rate of growth of traffic on the Central of Georgia and its relation to the growth of traffic on all the roads in the Southern Region, is shown in the following table covering the years 1919 to 1923, inclusive, and the first nine months of 1924.

Year	C. of Ga.	NET TON-MILES—MILLIONS	
		Southern Region	C. of Ga. per cent of Southern Region Traffic
1919	1,156	70,050	1.64
1920	1,455	83,805	1.74
1921	1,285	66,316	1.94
1922	1,393	76,480	1.82
1923	1,825	90,637	2.10
1924 (nine months)	1,239	58,125	2.13

The increase of net ton-miles in 1923 over 1920 for the Central of Georgia was 26 per cent, and for the entire Southern Region eight per cent. The increase for all the roads in the United States for the same period was only two per cent.

It is of interest also to examine the Central of Georgia

from the standpoint of the goals which were established by the A. R. A. in 1922. It has not been able to reach the goal for tons per loaded freight car because of the nature of its traffic, much of which does not lend itself to heavy car loading (fruit and agricultural products). Its average for 1923 (24.38 tons) is even below the average for all of the Class I roads in the United States, which for that year was 27.9. It has, however, made up for this in the greatly increased average speed at which the traffic has been handled. This is clearly shown in the diagram, which indicates that prior to the early part of 1920 the Central of Georgia was almost constantly below the average for all of the railroads in the country. Since that time, however, it has greatly exceeded the average for all of the roads and except for June, 1924,* has not fallen below 30 miles per day since September, 1922. Such a condition can only be achieved by the most careful and consistent attention on the part of all those who are concerned with freight car handling and movement. A leading question on the Central of Georgia is "What is the oldest car in your terminal?" It is by keeping after the delayed cars and speeding up the slow ones, that it has been possible to attain the enviable record indicated by the diagram.

Freight Claim Prevention

As already indicated, special efforts have been made to reduce the loss and damage to freight to a minimum. The success of the Central of Georgia in this respect is shown by the fact that it is fourth in the ratio of loss and damage to freight to freight earnings, of those railroads which earned in excess of \$25,000,000 per year. This must be considered as a real achievement when it is noted that most of the railroads in the first ten on this list are coal carrying roads. While the Central of Georgia handles a very considerable amount of perishable goods, its ratio is .6 per cent. This has been achieved only by a maximum degree of co-operation on the part of the entire Central of Georgia family.

RANK OF LOSS AND DAMAGE RATIO TO FREIGHT EARNINGS OF RAILROADS EARNING IN EXCESS OF \$25,000,000
YEAR 1923

Rank	Railroad	Ratio
1	Pittsburgh & Lake Erie	.3
2	Central Railroad of New Jersey	.5
2	Philadelphia & Reading	.5
4	Central of Georgia	.6
4	Delaware & Hudson	.6
4	Lehigh Valley	.6
4	Norfolk & Western	.6
8	Boston & Maine	.8
8	Delaware, Lackawanna & Western	.8
8	Chesapeake & Ohio	.8

Fuel Economy

As in the case of prevention of loss and damage to freight, maximum fuel economy can only be secured by real teamwork on the part of many classes of employees and various departments. That the educational work which is being carried on in a variety of ways, as well as the competitive spirit, is bringing results, is indicated by the figures for fuel performance for the month of August, 1924, (it is typical of other months for this year) which are given in the table in the next column.

All of the locomotives on the Central of Georgia are assigned and each locomotive is charged with the actual weight of the coal which is placed on its tender, or a careful estimate based on the size of bucket or bin from which the coal is delivered. The figures in the table include all the coal used by a locomotive on the road and in the terminals. Enginemen are commended for good records; if they are below the average in fuel performance steps are taken to locate the cause of the poor performance and

* This was because of a bumper peach crop. In order to protect the growers it was necessary to keep available an average of about 2,000 surplus refrigerator cars.

to help the enginemen to improve their standing. A noteworthy performance or a poor performance is sure to draw forth expressions from not one but several of the officers, including the division superintendent, the superintendent of motive power, the general manager, or even the president himself. The men can hardly fail to take an intelligent interest in their work when such stress is placed on this matter by the division and general officers.

FUEL PERFORMANCE FOR AUGUST, 1924

FREIGHT SERVICE								
Tons of coal	1,000 gross ton-miles	Pounds of coal per 1,000 gross ton-miles			Saving or loss	Tons of coal saved by better performance	Percentage saving or loss	
Aug. 1924	Aug. 1924	Aug. 1924	Aug. 1923	Saving or loss	23.7	4,959	14.1	
30,210	418,522	144.4	168.1					
PASSENGER SERVICE								
Tons of coal	Passenger Train car-miles	Pounds of coal per passenger train car-mile			Saving or loss	Tons of coal saved by better performance	Percentage saving or loss	
Aug. 1924	Aug. 1924	Aug. 1924	Aug. 1923	Saving or loss	2.2	1,864	13.4	
13,870	1,694,429	16.4	18.6					
SWITCHING SERVICE								
Tons of coal	Locomotive switching mile	Pounds of coal per locomotive switching mile			Saving or loss	Tons of coal saved by better performance	Percentage saving or loss	
Aug. 1924	Aug. 1924	Aug. 1924	Aug. 1923	Saving or loss	4.2 (loss)	221 (loss)	3.4 (loss)	
6,633	105,389	125.9	121.7					
Total coal saved								
General average saving or loss in all classes of service								11.5 per cent
Saving in money based on average price of \$2.455 per ton								\$16,207.91

The firemen are colored and they have their own fuel conservation meetings, most of them being keenly interested in this question. That they are well up on the theory of combustion, at least in many cases, may be discovered by stopping to chat with them.

Engine Failures

The best record for engine failures was made in the month of September, 1924, when 259,606 miles were run per failure. The definition of engine failure on the Central of Georgia is for passenger trains, a delay of 10 minutes or more caused by a mechanical defect on the engine or hot bearings; for manifest freight trains 30 minutes or more delay due to a mechanical defect or hot bearings; for other freight trains, giving up the train entirely and replacing it with another locomotive. Terminal failures are not charged; in other words, if an engine is delayed leaving a terminal because of some trouble with it, it is not considered a failure. The record of miles per engine failure for the first nine months of the year for the past seven years follows:

1918	16,118
1919	25,427
1920	22,585
1921	56,430
1922	41,512
1923	29,842
1924	95,981

The record for 1922 and 1923 was of course affected by the shopmen's strike. Investigation developed the fact that the quality of workmanship on the locomotives turned out of shop today is far superior to what it was two or three years ago, and this is being reflected in the better record which is being made in engine failures. It is important to note in this connection that the twelfth annual report of the Bureau of Locomotive Inspection shows that the Central of Georgia stands first in the small percentage of locomotives found defective for the year ending June 30, 1923, for those roads having a gross revenue of \$25,000,000 or over per year. The first ten roads in the order of this percentage are the Central of Georgia; Oregon-Washington Railroad & Navigation Company; Southern Pacific; Union Pacific; Illinois Central; Chicago, Milwaukee & St. Paul; Atchison, Topeka & Santa Fe; Elgin,

Joliet & Eastern; Chicago Great Western, and the Seaboard Air Line.

Safety First

The Central of Georgia is striving to improve its safety first record. This is done through the formation of safety first committees, frequent conferences and the posting of bulletins at the various points, containing the record by months for the year. A trained nurse is on duty at the Macon shops with a first-aid equipment. Constant efforts are being made to improve safety conditions.

A paper on the National Cost of Railroad Accidents presented by Lew R. Palmer, conservation engineer of the Equitable Life Assurance Society, before the Steam Railroad Section of the Safety Congress a year ago, showed that for the year 1922 the Central of Georgia stood eighth in the list of roads having between 10,000,000 and 50,000,000 man-hours, for injuries to employees on duty in train service, and non-train accidents. The number of injuries per million man-hours was given as 16.98. This figure for the 38 roads under consideration extended from 11.13 to 65.18, so that the standing of the Central of Georgia in this respect was excellent. A very considerable improvement has, however, been made by the Central of Georgia since 1922. Data compiled by Mr. Palmer for the first six months of 1924 show that the number of injured per million man-hours for that period was 13.21.

In 1923 the Central of Georgia arranged for group insurance to cover its employees. In 1923 the Metropolitan Life Insurance Company paid \$95,500 in benefits, in amounts from \$500 to \$5,000. During the early part of 1924 an opportunity was offered to double the amount of this insurance. This met with an immediate response from the employees, who quickly participated to such a degree as to make the new arrangement possible.

Another factor which has helped to build up the morale has been the announced policy, and it is lived up to, that

all promotions will be made from within the company, provided suitable material can be found. We have been able to find only one case within recent years where it was necessary to go outside the organization for an officer. This was for a man with a highly specialized training to fill a newly created position.

An effort has also been made to stabilize employment so far as possible. The traffic conditions on the Central of Georgia during the past few years have been favorable in this respect but the management has always aimed to keep the forces as uniform as possible. Possibly one reason for the esprit de corps on the road is the fact that it has been successful in accomplishing this to a very large degree.

The employees' magazine must be regarded as an important factor in building up morale and inducing intelligent co-operation. It is informative as to the conditions and performances of the Central of Georgia and to some degree about railroad conditions at large. It keeps the entire "family" fully advised as to the records which are being made in various respects, such as fuel conservation, loss and damage to freight, engine failures, operation, etc. It includes accounts of the various efficiency meetings which are held, gives the records of the freight soliciting associations and covers the various activities of the road in a way which appeals to the average employee. In short, it is a sort of clearing house for those things in which the members of the Central of Georgia family are especially interested.

Finally, and summing up, it would appear that the success of the Central of Georgia is due in large part to the recognition of the importance of the human element. With a close bond of fellowship throughout the organization, and with the establishment of concrete objectives or goals toward which to strive, the entire family is intensely interested in playing the game of improving the efficiency of operation and giving better service to the shippers and travelers.

Certificate for B. of L. E. Road Withheld

THE Interstate Commerce Commission, Division 4, has issued a decision finding that public convenience and necessity have not been shown to require the operation by the Coal River & Eastern, a railroad company organized in the interest of the Coal River Collieries Company, owned by members of the Brotherhood of Locomotive Engineers, of a line from Ashford to Warren S., W. Va., 2 miles, nor of a line from Seth to Prenter, W. Va., 11 miles. As to the first line the application was denied, but as to the second the proceeding was held open pending further negotiations between the shippers concerned and the Chesapeake & Ohio with a view to obtaining from that company adequate service. A tentative report proposed by an examiner had recommended denial of the application as to both lines but exceptions were filed and the case was orally argued before the commission. Both lines connect with the Chesapeake & Ohio, at junction points about 12 miles apart, and serve the brotherhood coal mines.

The Chesapeake & Ohio opposed the granting of the application on the ground, first, that there is no public need for the operation of the line in interstate commerce, and second, that the lines are spur tracks no different from hundreds of similar railroad facilities owned and maintained by mining companies operating mines located off its right of way in the coal districts of West Virginia and Kentucky which it serves. If the certificate requested is

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issued the applicant will be in a position to demand that the Chesapeake extend its Kanawha district coal rate to the mines owned by the Collieries and to secure a division of this rate. On behalf of the Chesapeake it was urged that this would have the effect of transferring from the Collieries to the Chesapeake & Ohio not only the expense of moving empty and loaded cars to and from the mines but also the burden of the investment in the lines, which, it is contended, should be and is ordinarily borne by the mine owners with mines located off its right-of-way. It was argued that where coal mining companies, generally because of cheap coal, elect to open mines off a carrier's right-of-way and invest in railroad facilities, such facilities are just as necessary adjuncts to the mines as are the railroads connecting them with the tipplers; and that it is against public policy to permit the burden of the investment in such railroad facilities to fall upon the shipping public.

The commission's report says in part:

Two questions are presented for consideration, first, whether the lines are spur tracks and therefore not subject to the commission's jurisdiction under the provisions of paragraphs (18) to (20), inclusive, of section 1 of the act, and, second, if the lines may properly be considered segments of a main line, whether the public convenience and necessity require that they be operated by the applicant in interstate commerce. The other contentions of the Chesapeake & Ohio may be considered only in so far as they are pertinent to a determination of these questions.

We are of the opinion that neither line can be classed as a spur.

While the bulk of the traffic of the Laurel Fork will be coal, the record shows that there will be an appreciable amount of traffic other than coal. It will serve two or three settlements or villages which will have no other means of transportation. The applicant proposes to establish stations at two of these places. In addition to serving the two large mines of the Collieries, it will serve an independent plant affording some traffic, and possibly some timber operations and independently operated mines. The line would hardly be classed as a spur and the facts of record sufficiently establish that there is need of transportation service along this line that cannot well be afforded by a spur track operation. There remains to be considered whether the public convenience and necessity require or will require the operation of the lines by the applicant in order to provide this service.

It is the custom of the Chesapeake & Ohio throughout the coal districts of West Virginia and Kentucky to extend its transportation service for the district rate to mines located off its right-of-way through the use of railroad facilities owned by mining companies operating mines so located. It appears that there were negotiations between the Chesapeake & Ohio and the Collieries with a view to the use by the former of the railroad facilities of the latter for the movement of empty and loaded cars by the Chesapeake & Ohio to and from the mines and that these negotiations failed because after inspection it was found that the railroad facilities of the Collieries did not meet the requirements of the Chesapeake & Ohio's operating standards and were not in condition for safe operation by the latter. With a little additional expenditure, the Lick Creek could be brought within the Chesapeake & Ohio's requirements. The evidence is that it would cost about \$200,000 to put the tracks of the Laurel Fork in condition for safe operation by the Chesapeake & Ohio. The Chesapeake & Ohio is now willing to perform the service of delivering empty cars at the mines and of returning the loaded cars from the mines at the Kanawha district rate provided the Collieries puts the lines in condition for safe operation according to the requirements of the Chesapeake & Ohio's operating standards.

On behalf of the applicant it is urged in substance that the proposal of the Chesapeake & Ohio to operate the lines under the usual spur track agreement is unfair in that it would throw a burden of investment in railroad facilities upon the Collieries that has not been required of other coal mining companies owning mines off the Chesapeake & Ohio's right of way; that the Chesapeake & Ohio has built numberless branches out of its own funds to serve coal mines off its right of way; that it performs common carrier service, including passenger and express service, over these branches which are no different in physical characteristics from the lines here involved; that it provides a blanket rate for the distribution of coal which extends on one of its branches far beyond the junction points with the two lines under consideration; and that it has participated in the establishment of a blanket rate from points on independently operated railroads within the blanket, both voluntarily and under compulsion of orders from this commission.

The operation of the Lick Creek as proposed by the Chesapeake & Ohio will adequately serve the mine at Warren S., and so far as appears will result in no discrimination against the interested shipper. It is believed, however, that sufficient showing has been made to warrant the conclusion that such operation of the Laurel Fork would not adequately serve the needs of the public and would result in discrimination against the principal shipper. It does not necessarily follow that the acquisition and operation of the Laurel Fork by the applicant is necessary to furnish the required service. Various provisions of the transportation act evidence an intent to bring about economies in transportation. Such is the purpose of the major provisions of that part of the act amending section 5 of the interstate commerce act. The independent operation of numerous short lines is not conducive to economies in transportation. Moreover, the expense of maintaining the separate organization of an independent carrier is considerable and adds to the general burden of the shipping public. Wherever possible needed transportation facilities should be furnished by existing carriers. This is especially true where, as in the case under consideration, the line which it is proposed to operate in interstate commerce will serve merely as a branch or feeder for an existing carrier. In such case the service should be furnished by the existing carrier and a certificate should be issued to a new and independent corporation only after a showing that proper and adequate service can not be obtained through existing carriers.

The facts of record indicate that the investment necessary for the Chesapeake & Ohio to make in the Laurel Fork to give the service needed would not exceed 50 per cent of the investment which the applicant proposes to make in the line and in equipment. The method employed by the Chesapeake & Ohio in the operation of its branches is much more economical than that which the applicant proposes. Under the circumstances service to the shippers on the Laurel Fork should be furnished by the Chesapeake & Ohio but, in view of the evidence as to branch lines owned by the Chesapeake & Ohio and built primarily to serve coal mining operations, the shippers should not, in a case like this, be required to carry the burden of investment in facilities. Before the applicant is permitted to operate the Laurel Fork in interstate commerce

the Chesapeake & Ohio should be given a further reasonable opportunity to buy the line and furnish the required facilities and service as it has been doing in numerous similar cases and further showing should be made herein that the Chesapeake & Ohio has failed or refused to avail itself of the opportunity thus afforded.

Commissioner Potter dissented.

Freight Car Loading

WASHINGTON, D. C.

FREIGHT car loading in the week ended January 10 continued to exceed previous figures for the corresponding week. The total was 932,807 cars, which was an increase of 60,784 cars as compared with last year and of 59,899 cars as compared with 1923. Increases as compared with the corresponding week of last year were reported from all districts and in all classes of commodities. Miscellaneous freight showed an increase of 24,327 cars, l.c.l. merchandise an increase of 12,685 cars, and coal an increase of 6,359 cars. The loading of grain and grain products, coke, and ore, however, showed decreases as compared with 1923. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

REVENUE FREIGHT CAR LOADING			
Week Ended Saturday, January 10, 1925.			
Districts	1925	1924	1923
Eastern	212,531	210,838	209,848
Allegheny	183,410	177,255	184,123
Pocahontas	50,022	39,543	31,837
Southern	147,223	133,149	136,276
Northwestern	118,651	108,346	114,167
Central Western	150,390	141,802	138,889
Southwestern	70,580	60,690	57,768
Total Western	339,621	310,838	310,824
Commodities			
Grain and grain products	50,948	44,323	51,025
Livestock	39,917	39,735	36,880
Coal	217,412	211,053	198,770
Coke	13,614	11,783	13,794
Forest products	69,297	63,524	68,517
Ore	10,616	7,614	11,014
Mds., l. c. l.	232,663	219,978	211,249
Miscellaneous	298,340	274,013	281,659
Total	932,807	872,053	872,908
January 3	765,727	706,292	767,296
December 27	.....	646,880	615,419
December 20	.....	899,776	877,627
December 13	.....	956,761	899,757

The freight car surplus for the week ended January 7 averaged 280,666 cars, including 106,987 coal cars and 130,919 box cars. For the Canadian roads the surplus was 29,100 cars, including 24,700 box and 300 coal cars.

Car Loading in Canada

Car loadings at stations in Canada for the week ended January 10 totalled 50,168 cars, an increase over the previous week of 9,799 cars due principally to the holiday in the previous week and also to milder weather. Grain loading increased 1,529 cars, miscellaneous freight was heavier by 2,335 cars, merchandise by 1,781 cars, and other commodities showed slight increases. Compared with the same week last year grain loading was up by 3,052 cars and pulp and paper and miscellaneous freight showed small decreases, but all other commodities showed increases, making the net increase 1,554 cars.

Commodity	For the week ended		
	Jan. 10 1925	Jan. 3 1925	Jan. 12 1924
Grain and grain products	5,815	4,286	8,867
Live stock	3,148	2,047	2,226
Coal	7,653	7,294	6,286
Coke	317	266	209
Lumber	2,544	1,998	2,384
Pulpwood	3,129	2,084	2,615
Pulp and paper	2,032	1,596	2,113
Other forest products	2,321	1,705	2,266
Ore	1,065	1,065	855
Merchandise, l. c. l.	12,739	10,958	11,296
Miscellaneous	9,405	7,070	9,497
Total cars loaded	50,168	40,369	48,614
Total cars received from connections	27,186	26,387	27,075

Director General Reports to President

WASHINGTON, D. C.

JAMES C. DAVIS, director general of railroads, has submitted to the President his annual report for the year ended December 31, 1924, and, in addition, a final report as to the adjustment of the claims of all carriers whose property was taken over and actually operated by the government during the 26 months of federal control.

This adjustment represents a final settlement with every carrier whose property was actually taken over, except two small affiliated companies in Colorado. Their properties are in receivership, and cannot be adjusted with by the government pending the conclusion of differences that have arisen between them. As this affiliated property is indebted to the government, there will be no further liability or expenditures because of it.

The entire cost to the government for the period of federal control and the six months guaranty period immediately following federal control, according to the report is now calculated as follows:

The loss of the government during the period of federal control aggregated	\$1,123,500,000.00
The expenses of the guaranty period are estimated by the Interstate Commerce Commission at.....	536,000,000.00
Amount required to reimburse small deficit roads (short lines), under the provisions of Section 204 of the Transportation Act, estimated by the Interstate Commerce Commission at.....	15,000,000.00
This makes a grand total of the loss and expenses of the government during the 26 months of federal control and the 6 months guaranty period, of.....	\$1,674,500,000.00

This adjustment was one of the most important and perplexing problems requiring solution by the government as a result of the World War. It is undoubtedly the largest liquidation involving a single commercial interest ever undertaken. The transportation system taken over comprised 532 separate railroad properties, 25 coastwise and inland steamship lines, the Pullman car lines, private car companies, floating equipment used in rivers and harbors, elevators owned by railroads, and all other properties essential to national railroad operation. As a part of the property taken over, there was more than \$530,000,000 of materials and supplies, distributed over the entire mileage, and the government took over cash working capital of the carriers aggregating \$300,324,633.62.

The compensation or rent for which the government was liable for the use of this property for the 26 months aggregated more than \$2,000,000,000.00, or about \$80,000,000.00 for each month of federal control.

The exigencies of war required the taking over of this system of transportation on the part of the government arbitrarily, and without notice. No preliminary examination or record of the physical condition of the property at the time it was taken over was made, and no inventories were taken. No intelligent survey was attempted that might be the basis of a future comparison as to the condition of this plant at the time of the taking and the time of its return.

At the end of federal control, after 26 months of government operation, the separate transportation lines were returned to their respective owners with an obligation on the part of the government to see that when returned reasonable compensation for the use of this property was made, and, further, that the property was "in as good

repair and as complete equipment as when taken over by the government."

The President of the United States was authorized by Congress, at the end of federal control, to "as soon as practicable after the termination of federal control, adjust, settle, liquidate, and wind up all matters, including compensation, and all questions and disputes of whatsoever nature, arising out of or incident to federal control." Two appropriations, aggregating some \$500,000,000.00 were made for the purpose of liquidation.

At the end of federal control the government owed the carriers a balance due on compensation for use of their property aggregating over \$860,000,000.00. During federal control the government had advanced to the various carriers, for additions and betterments including allocated equipment, a total sum of \$1,157,540,178.65, of which \$380,036,122.94 represented the cost of 2,000 locomotives and 100,000 freight cars bought by the director general during the period of federal control and allocated to the various carriers. This equipment was largely paid for by equipment trust certificates executed by the carriers, payable to the director general, and secured by a lien on the equipment.

Federal control ended February 29, 1920. In the latter part of that year the carriers began filing their claims against the government for the balance claimed to be due them on account of the use and operation of their property during federal control, and other claims based upon an undermaintenance of the property while the government operated it. The principal items involved in the latter claims were maintenance of way and structures, maintenance of equipment, depreciation, replacements, and the like.

The original claims filed by the carriers against the Railroad Administration growing out of federal control, for the items above enumerated, totaled \$1,013,389,502.12. These claims were subsequently revised so that the amount of the claims actually the subject of liquidation, presented by the carriers, aggregated \$768,003,274.23.

The Railroad Administration, on its part, set up tentative claims against the carriers aggregating a balance of \$438,130,811.74.

These balances represented the disputed items respectively contended for by the carriers and the Railroad Administration. Included in the carriers' claims were items for undermaintenance of way and structures aggregating \$341,825,409.62, and for undermaintenance of equipment \$335,685,197.38.

In the Railroad Administration claims against the carriers there was a total claim for excess maintenance expenses, including both way and structures and equipment, of \$309,614,100.24. These items of maintenance were the most important and the largest involved in the controversies arising in the liquidation.

The adjustment required separate settlements with 371 systems, many systems representing more than one independent company. In making these adjustments the director general allowed the creditor lines \$243,647,196.91, and there was collected from the debtor lines by the Railroad Administration \$195,072,295.17. The excess allowed over amounts collected was \$48,574,901.74, or slightly in excess of 6 per cent of the carriers' claims as finally presented.

The adjustment was completed without litigation. It

was concluded in about four years, and it was made within the appropriations originally granted by Congress for that purpose.

The financial operations of the Railroad Administration disclose an unusual situation for a government Bureau. The Railroad Administration, as a result of federal control, took from the carriers definitive obligations consisting of funding notes, bonds, and equipment trust certificates, aggregating \$629,202,550.00. The director general has collected or sold of these obligations, sales being made without recourse on the government, a total of \$454,513,750.00. This amount has been paid into the United States Treasury. Exclusive of some miscellaneous assets in the field, the Railroad Administration still holds definitive obligations of the carriers aggregating \$174,688,800.00.

The present assets of the Railroad Administration, exclusive of some miscellaneous items, consist of:

Unexpended appropriations to its credit.....	\$491,814,473.73
Definitive obligations of carriers.....	174,688,800.00
Total.....	\$666,503,273.73

The obligations of the carriers held by the Railroad Administration all bear 6 per cent interest, and the annual interest on this indebtedness will more than provide funds to complete the remaining unadjusted items in this liquidation, so that the Railroad Administration is now and will be in the future an income-producing asset of the government rather than a liability, and the big question as to what the government owed the railroads for the use of their property after the war is definitely ended, and the debt paid.

In addition to the claims of the carriers whose property was taken over, there are a considerable number of claims of third persons, such as fires, personal injuries, claims of short line railroads, Minnesota forest fire claims, some 6,000 or 7,000 law suits pending, and some assets of the government in the field which are still to be collected. While these separate controversies are small in comparison with the settlements that have been heretofore made, the aggregate runs into some millions of dollars. It will take a reasonable time, with a greatly reduced overhead, to finally close up all of these controversies.

Bill to Abolish Port Differentials

ABILL to abolish all port differentials in export and import rail rates and to require railroads and ocean carriers to maintain the same rates for the same classes or kinds of property to and from all ports on the same seaboard was introduced in the Senate on January 14 by Senator Butler of Massachusetts as S. 3,927 and in the House later by Representative Garber as H. R. 11,703. The bill is entitled as one "to promote the flow of foreign commerce through all ports of the United States and to prevent the maintenance of port differentials and other unwarranted rate handicaps," and represents the views of the New England interests that have been trying for some time to accomplish a similar object in proceedings before the Interstate Commerce Commission and the Shipping Board. The bill provides in part:

Sec. 2. On and after June 1, 1925, it shall be the duty of common carriers by railroad to establish and maintain for the transportation between United States ports on the Atlantic ocean, the Pacific ocean, and the Gulf of Mexico, respectively, of all property exported to or imported from any nonadjacent foreign country, rates that shall be the same as between ports on the same seaboard upon the respective classes or kinds of property: *Provided*, That the Interstate Commerce Commission may define the territory tributary to any port or group of ports from and to which the rates and charges applicable to such export and import traffic may be lower than the corresponding rates and charges to and from other port or ports on the same seaboard;

On and after June 1, 1925, it shall be unlawful for any common carrier by railroad to maintain or apply to or from any port in the United States from and to non-tributary territory any rate or charge for the transportation of property for export to or imported from a foreign country not adjacent to the United States which is higher than the corresponding rate contemporaneously maintained to or from any other port on the same seaboard, or to prefer any port by the maintenance of port differentials or other differences in rates;

It is hereby made the duty of common carriers by water in foreign commerce, other than tramp vessels, to maintain and apply for the transportation of property imported into or exported from the United States to or from foreign countries not adjacent thereto, rates that shall be the same for transportation from and to all United States ports on the Atlantic seaboard, the Pacific seaboard, and the Gulf of Mexico, respectively;

On and after June 1, 1925, it shall be unlawful for any common carrier by water in foreign commerce to maintain or apply to or from any port of the United States to or from foreign countries not adjacent thereto any rate applicable to the transportation of

WASHINGTON, D. C.

property imported into or exported from the United States that shall be higher than the corresponding rate contemporaneously maintained to or from any other port on the same seaboard, or to prefer any port by the maintenance of port differentials or other differences in rates.

Sec. 3. Any steamship line or vessel serving any port of the United States shall be permitted, in its discretion, to establish and maintain to and from such port ocean rates as low as those maintained by any other steamship line or vessel between any other port in the United States and the same foreign port, and any contract or agreement to the contrary is hereby declared to be unlawful.

In a statement Senator Butler said the principal objects of this bill are:

1. Elimination of the so-called "port differentials" in rail rates whereby the ports of Philadelphia, Baltimore and Norfolk are accorded lower export and import rail rates than any other ports on the Atlantic seaboard.

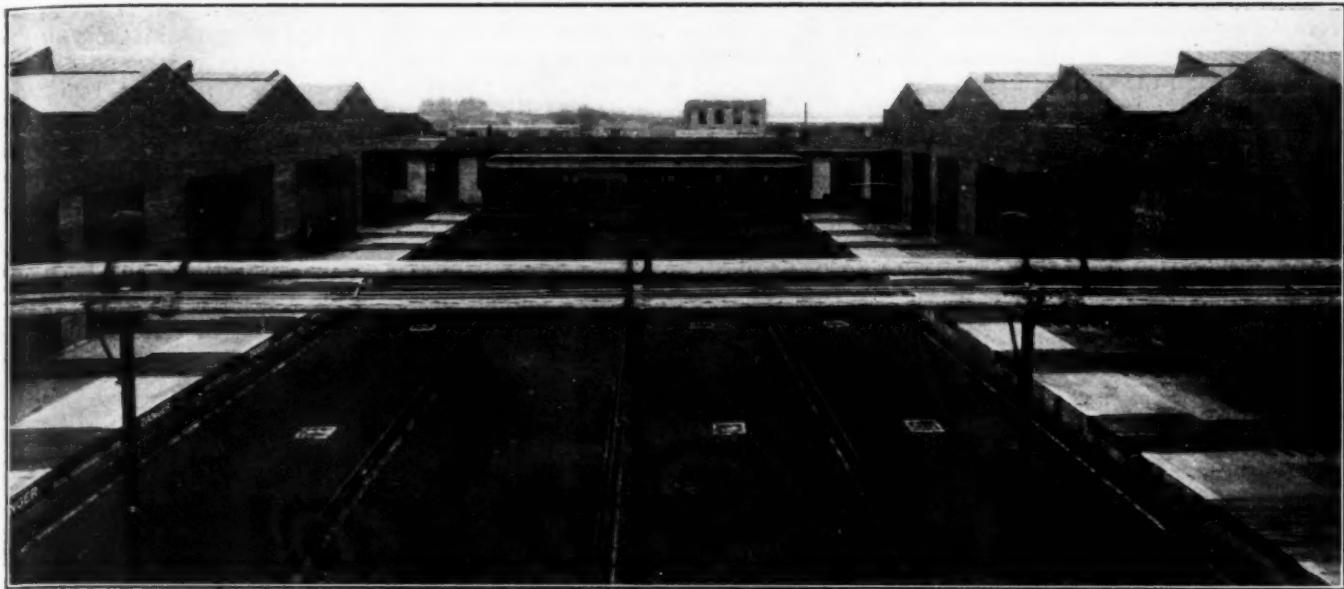
2. Elimination of the so-called "ocean differentials" from the South Atlantic ports, whereby the South Atlantic ports are required on many commodities to pay rates higher than the North Atlantic ports.

3. Granting permission to the Gulf steamship lines to meet the competition of steamship lines serving the North Atlantic ports and to declare unlawful any contract agreement or arrangement restricting such competition.

"Port differentials in rail rates are unknown on any seaboard of the United States except the North Atlantic," Senator Butler said. "The New England ports and the port of New York are grouped under a common rate. The South Atlantic ports are grouped. The same is true of the Gulf coast and of the Pacific coast. A shipper in the middle west can ship to Pensacola at the same rail rate as applies to New Orleans; or he can ship to Vancouver on the same export rail rate as applies to Los Angeles. It is only when we come to the North Atlantic ports that we find the so-called 'port differentials' whereby certain ports are given a rate advantage. The present port differentials are the result of a compromise made between the railroads following a long series of rate wars. The flow of the nation's export and import commerce is a matter of national concern. Its flow should not be determined by individual railroads selfishly interested in obtaining the traffic or in favoring certain ports. . . ."

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The Coach Repair Shop and Transfer Table

New Wabash Coach Shops Marked by Effective Use of Space

Interesting repair facilities at Decatur, Ill., also include a large storehouse of advanced design

AS a result of a disastrous fire early in 1924, the Wabash has built and put into operation at Decatur, Ill., a new coach repair unit, and a storehouse and oil house of more than ordinary interest. The coach unit is of the transverse type and consists of two buildings

four tracks and measuring 462 ft. long and 80 ft. wide. Adjoining this was a combined office, storehouse and oil house, 40 ft. wide and of the same length. These units burned to almost entire destruction, only a few sections being left practically unharmed. A subsequent study indicated that a modern type of transverse repair and paint shop could be built in this burned-out area, utilizing a separate location for a new storehouse which would fit in better with any program for expanding the Decatur facil-



The Storehouse Is Well Lighted

separated and served by a transfer table. It is of brick, concrete and steel construction and well laid out for economical operation. The storehouse is of the same general type of construction and is noteworthy because of its design, capacity and class of equipment. It has been built on a new location to conform with proposed future enlargements of the shop facilities at this point.

The old facilities which were destroyed by fire consisted of a longitudinal coach repair and paint shop having



The Oil Storage Equipment in the Storehouse

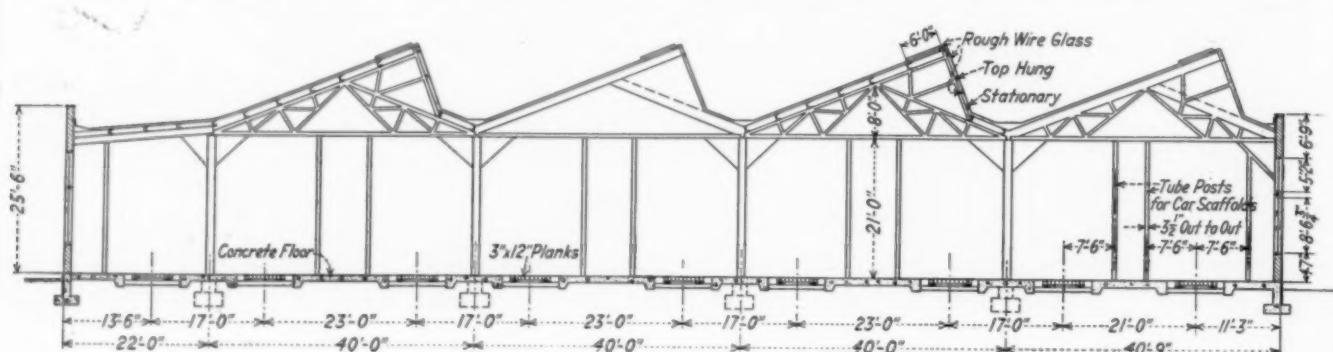
ties. This scheme was adopted and one of the interesting phases of it was the arrangement of the design to include two large toilet and lavatory rooms, which had formed a part of the old unit and which had not been destroyed by the fire. The inclusion of these old facilities not only

reduced the cost of the new but also permitted the quicker completion of the work since it was not necessary to make any major changes in the existing water and sewerage piping through the yard and shop area.

A Transverse Arrangement Was Used

The repair and paint unit consists of two buildings separated by a transfer table, one of which is used for heavy repairs to passenger cars and the other for painting and for light repairs, a section having been set aside for

steel frame, brick walls and steel sash. The roofs are of the saw-tooth type with three-inch gypsum slabs cast in place and dressed with four-ply felt, pitch and crushed stone. The floors are of six-inch concrete reinforced against temperature changes and shrinkage and treated with an integral hardener to prevent surface dusting. The tracks are of ballasted construction and planked over. Reinforced concrete beams paralleling the ends of the ties are placed at each track to provide a jacking support. Drainage gutters were provided outside of and between



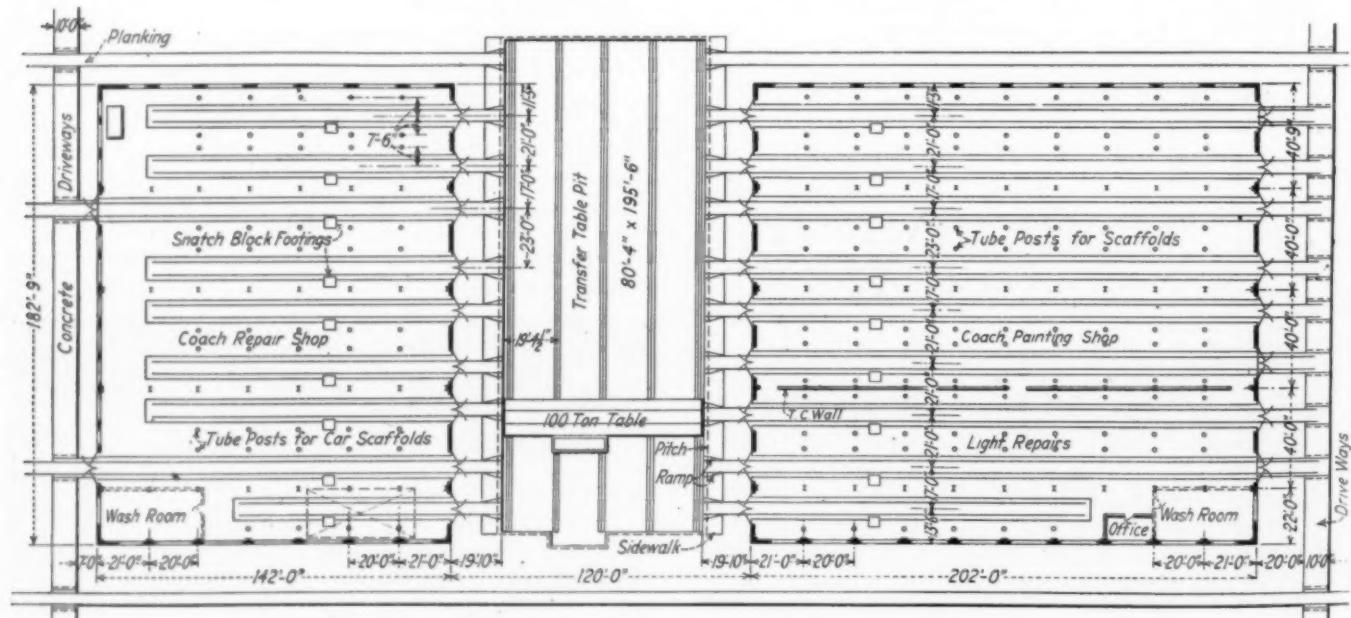
A Typical Cross-Section of the Shop Buildings

this latter purpose. The repair shop is 142 ft. long by 189 ft. wide. The paint shop is 202 ft. long and likewise 189 ft. wide. It is divided into two sections by a longitudinal fire wall, forming two rooms 127 ft. and 62 ft. wide, the smaller being used for light repairs. The transfer table is 80 ft. long and has a 100-ton capacity. There are nine tracks in each building, with capacities of one car per track in the heavy repair section, two cars per track in the paint shop and with the exception of one of

the rails and the jacking beam to carry off the water from car washing. The floors are graded to drain into the gutters.

Trucking Ways Are Provided in the Shops

The building columns are spaced 20 ft. longitudinally and 40 ft. across the building with the tracks on alternate 17 ft. and 23 ft. centers. This alternate spacing of tracks was done to permit the use of clear trucking ways approx-



General Plan of the Coach Shops and Transfer Table

the three tracks in the light repair shop, two cars per track in this section. The track arrangement, in conjunction with the transfer table, is such that any car can be pulled without interference from or interfering with another car on the same track. This is accomplished in the paint shop by connecting the house tracks to the old yard tracks at the end opposite the transfer table.

The general type of construction was the same in both buildings and included concrete foundations, a structural

imately 6 ft. wide. In the 17-ft. bays, the scaffolding was supported from the building columns while in the 23-ft. spacing, supports were provided by means of two lines of 3½-in. pipe embedded in the concrete at the base and attached to the bottom chord of the roof trusses at the top, the lane between the two rows of supports being used for the trucking way. The scaffold planks were 2 in. by 10 in. by 22 ft., trussed with rods and carried on adjustable brackets of welded steel construction and made to slide up

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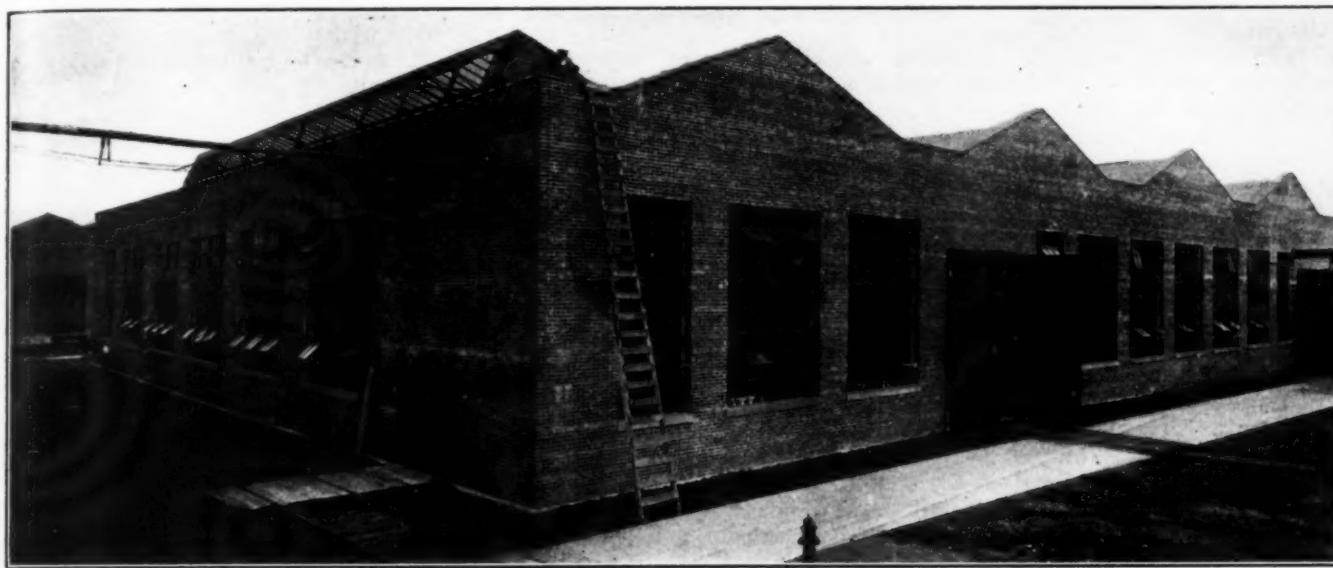
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and down on the supports where they are held at the desired elevation by pins.

Natural lighting was secured by the use of large areas of steel sash windows in the end and side walls and overhead by the use of the saw-tooth type of roof in which the

unit heaters designed and located to maintain a temperature of 60 deg. The paint shop is heated by radiators placed along the walls and in the roof. A temperature of 80 deg. is maintained. Concrete anchors and rings for snatch blocks are located alongside each track in both



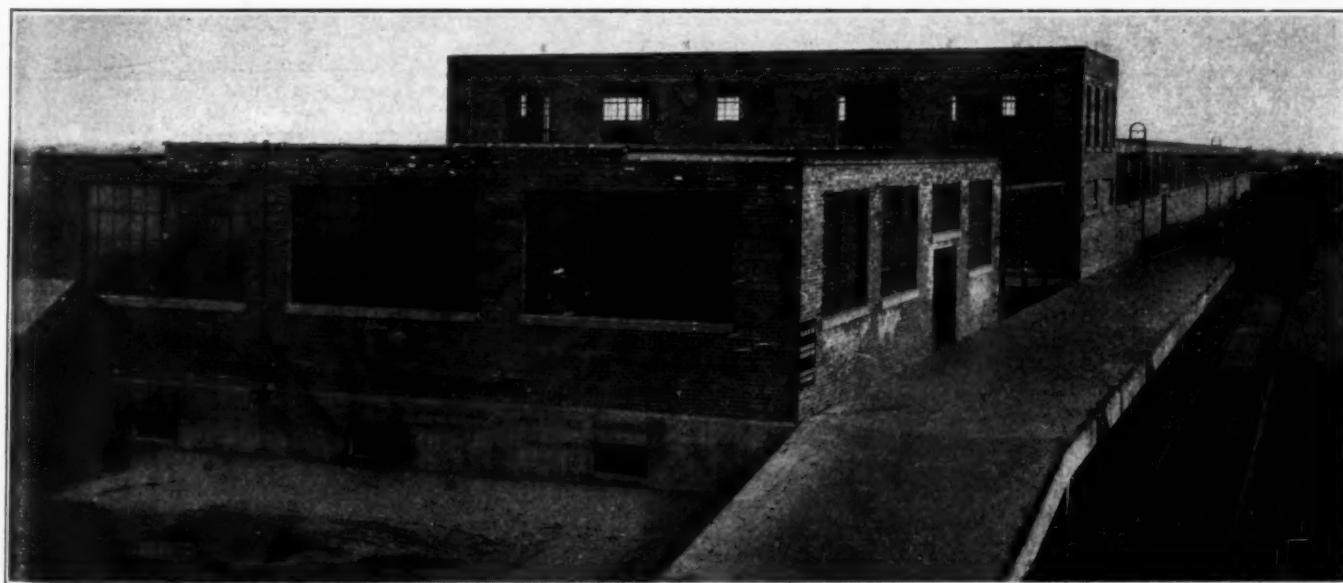
Large Window Areas Are Provided in the Coach Repair Shop

usual arrangement of the sash was amplified by a line of skylights along the opposite slope. This arrangement provides natural light on each side of the cars. Artificial lighting is provided by electric lights located on 15-ft. centers along the aisles and arranged to illuminate the sides of the cars. Separate lights have been installed on a watchmen's circuit for night service. In order to aid in the diffusion of the light, the interior walls were painted

shops to permit the towing of cars off and onto the transfer table on which there is installed a towing winch.

The Storehouse Is of Advanced Design

The storehouse was located on the site of the then existing dead storage tracks, the location selected being accessible to the present shop buildings and the proposed future freight car repair shops. The building is one-



The Storehouse and Platforms Are of Permanent Construction Throughout

mill white. The steel work was painted grey. A high black dado 4 feet was put on the walls and the steel work.

Plug outlets for extension lights and for welding and power are located on the columns. High pressure steam for testing is supplied to each track as well as compressed air, the connections for the latter being on the columns. The heavy repair and light repair shops are heated by

story high, 80 ft. wide by 450 ft. long, on one end of which is a second floor, 32 ft. by 80 ft., forming the office for the division storekeeper. A modern oil house is situated near one end of the storehouse. This is a one-story and basement structure measuring 50 ft. by 59 ft. in size. The entire layout is served by a reinforced concrete platform 14 ft. wide and 560 ft. long with straight ramps at

each end and extending alongside both the storehouse and the oil house. In addition there are 10-ft. by 80-ft. concrete platforms across each end of the storehouse. A motor truck loading and unloading space has been reserved between the two buildings with a roadway leading from it to the main yard roadway. This permanent trucking area has about 1,200 ft. of platform space in connection with it.

The building construction in the storehouse consists of concrete fundations, steel frame, brick walls, steel sash and gypsum slab roof, etc., similar to the shop buildings. The floor is reinforced about 50 per cent heavier than the floors in the shops. A fire wall divides the building into two sections. While fireproof vaults are provided for torpedoes and other similar inflammables and for packing boxes and packing. Extensive packing counter facilities have not been included since a large volume of the materials is distributed by supply cars. The storehouse is equipped with two floor scales, each having a 4-ft. by 6-ft. platform, and with adjustable steel shelving, 7 ft. high and 3 ft. wide which are set up in 21-ft. sections. Wholesale package and bulk materials are stored on island platforms. The unit piling and accumulative count marking system is utilized for handling the materials. The storehouse is operated on the section storekeeper or stockman plan. Each has his retail and warehouse stock in the same locality, thus eliminating the necessity of going from one building or floor to another in order to supervise or handle properly the material stock for which

oil. Eight 1-gal. self-measuring hand pumps are located on the first floor for drawing oil for shop uses. In addition to the storage tanks in the basement, there are ten 280-gal. floor tanks on the first floor for oils and paints not handled in sufficient quantities to justify basement storage and hand pumps. The filling of drums for local shipment is accomplished by means of a rotary power pump and a predetermined registering and measuring equipment. This pump can be connected to suction pipes extending to each of the 11 main storage tanks. Drip pans are provided and when changing from one kind of oil to another, the pump can be washed out with a small quantity of light oil which then passes through the drip



The Interior of the Coach Shop

he is responsible. Tractors and trailers have been provided to replace two-wheel warehouse trucks and four-wheel hand wagons for the movement of miscellaneous materials, as well as for unloading from cars to store house and yard locations and vice versa, and for intra-yard transfers.

The Oil House is Completely Equipped

The oil house is a fireproof structure with concrete foundations and frame, brick walls and steel sash. Flat slab construction was used on the first floor in order to provide a maximum of headroom in the basement. The basement contains 11 rectangular steel tanks of 6,000 and 8,000 gal. capacity for the storage of 8 kinds of



The Shelving Arrangement in One Portion of the Storehouse

pan to the fuel oil tank. This use of the pump enables one man to do quickly the work which formerly required two men.

Oil is received in tank cars and is unloaded by gravity, eight 3-in. fill pipes having been installed near the track for this purpose. Eight barrel fills have also been included in the floor within the building for emptying incoming barrels and drums. A high pressure steam connection is provided for heating the oil tank cars and the tanks in the basement are vented to the roof. Steam fire protection is used inside of the building and is controlled by valves extending through the wall.

New Facilities Were Completed in Short Time

As these buildings replace those destroyed by fire it was necessary to complete the new structures at the earliest date consistent with economical construction. The demolition of the old buildings was started about the first of April and on August 1, the coach repair shops were turned over to the railroad, minor finishing up work continuing after the structures were placed in use. Work on the storehouse was likewise started in the early part of April and the buildings were completed and turned over for use on September 1. The new facilities were built under the general direction of J. E. Taussig, president, S. E. Cotter, vice-president and general manager, R. H. Howard, chief engineer, C. F. Hess, general superintendent of motive power and H. C. Stevens, general storekeeper. The development of the plans and the construction itself was carried out by Dwight P. Robinson & Company, New York. The oil equipment was furnished by S. F. Bowser & Company, Fort Wayne, Indiana.

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Texas & Pacific in Promising Position

*Reorganization and the amendment of the federal charter
remove severe handicaps*

REORGANIZATION of the Texas & Pacific, effective last May, did several things besides terminating the receivership which had begun in 1916. Of these probably the most important was that it restored the property to good standing in the Missouri Pacific family. In so doing it finally made it possible for the Missouri Pacific to realize something on the large holdings in Texas & Pacific, which the former parent of the Gould system had succeeded in retaining during its own financial adversities. The termination of the receivership was assisted by a change in the Texas & Pacific's federal charter, which corrected a serious fault in the property's corporate powers whereby it was prevented from increasing its bonded indebtedness. Finally, the receivership marked the end of several years of litigation

chase new equipment with the aid of equipment trusts but other capital improvement could only be paid for out of net income.

The Texas & Pacific succeeded in earning a balance after fixed charges, the larger part of which net it was the custom to appropriate for installments on equipment trusts, and for capital improvements. In 1922 and 1923, all of the corporate income after charges was so utilized; in 1920 and 1921, the appropriations actually exceeded the net after charges. When the recent reorganization was effected, an amendment was made to the charter—it required an act of Congress, February 9, 1923, to do it—removing the limitations of the original charter as to bond issues, and increasing the capital stock from \$50,000,000 to \$75,000,000.

TEXAS & PACIFIC REVENUES AND EXPENSES

	1924 11 Months	1923 11 Months	Per cent increase or decrease
Total operating revenues.....	\$30,472,319	\$29,487,270	3
Maintenance of way.....	4,380,396	4,163,344	5
Maintenance of equipment.....	5,943,636	6,704,289	-11
Transportation	10,400,156	10,501,876	-1
Total operating expenses.....	22,999,648	22,993,622	-0.25
Net operating income.....	5,007,457	4,423,990	13
Operating ratio	75.5	78.0	...
Maintenance ratio	33.9	36.9	...
Transportation ratio	34.1	35.6	...

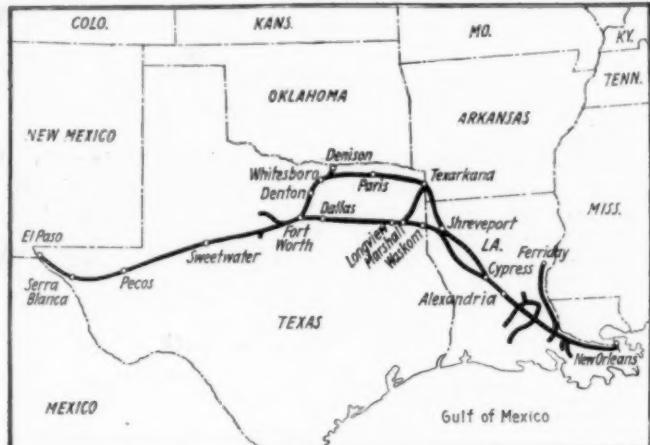
Second Mortgage Bonds Owned by Missouri Pacific

Prior to the reorganization, the Texas & Pacific had outstanding \$38,775,110 common stock, of which the Missouri Pacific owned \$10,000,000. There was an issue of \$24,989,000 first mortgage bonds, an issue of \$4,970,000 Louisiana division branch line bonds, some \$5,000,000 of equipment trusts, and, finally, \$24,662,000 of second mortgage bonds. The Missouri Pacific owned \$23,703,000 of the last named issue or, in other words, practically all of it. It was because of conditions relating to these bonds that the Texas & Pacific went into receivership. The bonds were supposed to pay their interest if earned, but none was ever paid. Net earnings have always been sufficient to cover such interest. It was not paid because the directors felt it more necessary to use the money for capital improvement.

The receivership proceedings were instituted by the receiver of the Missouri Pacific (St. Louis, Iron Mountain & Southern) in 1916 to enforce payment of certain promissory notes, and litigation was instituted to collect the unpaid interest on the second mortgage bonds. Decision was finally handed down in 1921 and affirmed by the United States circuit court in 1922. The decision held in practical effect that acquiescence by the Missouri Pacific in the policy of appropriating for capital improvement the money otherwise available for bond interest estopped the parent company from collecting such interest in the period from 1889 to 1915, and similarly, that no interest was due for the succeeding period of the receivership if, as was the case, it had been deemed expedient to apply the net earnings for capital expenditures. There was, however, a judgment on notes which, with interest, had amounted on December 31, 1923, to \$4,440,583.

Reorganization

In the reorganization the first mortgage and Louisiana division bonds were left without change. The judgment on the notes was taken care of in the form of new serial



The Texas & Pacific

by putting into effect court decisions handed down in 1921 and 1922.

In December, directors of the Texas & Pacific placed on a dividend basis the new preferred stock issued in connection with the reorganization. The rate established was 5 per cent and the amount paid was \$2.91; this was intended to cover at this rate the period from May 26, 1924, the date on which the stock was issued, to the end of the year. Practically all the preferred stock is owned by the Missouri Pacific, which was thereby enabled to add some \$700,000 to its 1924 corporate income; it will be able to add about \$1,185,000 in 1925.

Operates Under Federal Charter

The Texas & Pacific was incorporated in 1871 under an act of Congress, and still operates under a federal charter. It went into receivership in 1885, and was sold at foreclosure in 1887, and subsequently reorganized. The foreclosure sale, however, was never confirmed, and the charter was retained. In the wisdom of the time, the charter when it was granted was made to include a provision limiting the bonded indebtedness to \$40,000 a mile. The unfortunate result was that when the \$40,000 limit was reached the road was prevented from further financing. It could not issue more bonds; neither the conditions of the times nor the earning power of the property permitted the sale of stock. The road could and did pur-

notes maturing over a period of ten years from January 1, 1930, but bearing interest from January 1, 1924. The most important change was the exchange for the second mortgage bonds, over which there had been so much difficulty, of new non-cumulative 5 per cent preferred stock, and it is this new stock which has recently been put on a dividend basis. The capitalization of the Texas & Pacific prior to the reorganization totaled \$98,187,670 with fixed charges (excluding interest on the second mortgage bonds) of \$1,738,075. Following the receivership, the capitalization, inclusive of the notes given to the Missouri Pacific and a note of \$4,400,000 given to the United States Railroad Administration, became \$107,028,254, and the fixed charges \$2,268,510. There was, in short, an increase both in capitalization and fixed charges, but on the other hand a far more sensible financial arrangement and a change in the entire situation which permits the property a much needed freedom of action that it did not hitherto have. The company may now issue bonds not to exceed one and one-half times its outstanding capital stock, but not in any case to exceed \$120,000,000.

Has Always Earned Margin Over Fixed Charges

The Texas & Pacific has consistently operated with a net after charges. Even in the poorest year since as far back as 1912, namely 1913, net after charges totaled approximately \$600,000. The charges do not include the interest on the second mortgage bonds, which would have totaled \$1,250,000 annually. Since the receivership began in 1916 there has not been a single year in which this interest has not been earned with a fair margin. The year 1918 was the poorest during the receivership, and there was available in that year for interest on these bonds \$1,681,571. In the best year in the company's history, 1917, there was a net after charges of \$4,236,072. In 1923 corporate net income was \$3,433,111, which amount will probably be exceeded by the figure soon to be reported for 1924.

It was noted above that most of the net income has been appropriated for capital improvements. From the beginning of the receivership in October, 1910, to the end of 1923, there was expended out of earnings for additions and betterments a total of approximately 15½ million dollars. If, during the past few years, the Texas & Pacific has had net income sufficient to pay the interest on its second mortgage bonds, it follows that it should easily be able to earn a wide margin over the recently established 5 per cent dividends on the preferred stock issued in exchange for these bonds.

The new preferred stock has equal voting power with the common. The Missouri Pacific owns \$23,703,000 preferred and \$10,000,000 common, or \$33,703,000 of the Texas & Pacific total stock outstanding of \$63,415,110, (well over the 51 per cent required for control).

TEXAS & PACIFIC SELECTED OPERATING STATISTICS

Unit	1920 Year	1921 Year	1922 Year	1923 Year	1924 10 Mos.
Net ton-miles, thousands..	1,987,501	1,563,290	1,538,038	1,702,393	1,584,675
Freight cars per train.....	30.8	34.7	36.8	36.6	37.8
Gross tons per train.....	1,130	1,200	1,302	1,307	1,350
Net tons per train.....	483	468	529	529	540
Net tons per loaded car..	23.5	22.0	21.7	22.0	22.2
Train speed (miles per train-hour)	9.3	11.0	10.4	10.9	12.3
Net ton-miles per train-hour	4,513	5,180	5,506	5,771	6,618
Lb. coal per 1,000 gr. ton-miles	201	182-155*	159	148	138
Net ton-miles per car day.....	360	364	337	396	448
Car miles per day.....	22.2	26.2	22.8	26.6	30.6
Locomotive miles per locomotive day.....	58.0	48.0	40.1	44.0	49.0
Per cent freight cars unserviceable	8.5	18.6	16.6	10.7	9.6
Per cent freight locos. unserviceable	34.7	38.1	43.1	30.7	19.4

* Corrected figure.

Mileage

The Texas & Pacific mileage totals 1,953. This includes the line from New Orleans, La., to El Paso, Tex., via Alexandria, La., Shreveport, La., Marshall, Tex., Dallas and Fort Worth. There connect with this line three lines from Texarkana, one at Fort Worth, one at Marshall, and the third at Shreveport. Finally, there are various branches in Louisiana. The line from Texarkana to Marshall and Longview Junction is a connecting link in the route of the Sunshine Special constituted by the Missouri Pacific north of Texarkana and the International-Great Northern south of Longview Junction. This route forms also part of the trade route to Mexico via Laredo, the leading point of interchange between the lines in the United States and the National Railways of Mexico. On business moving over this route the Texas & Pacific gets only a 91-mile haul, but inasmuch as this Marshall-Longview Junction link connects the Missouri Pacific with its new acquisitions, the International-Great Northern and the Gulf Coast Lines, it has an importance not indicated on a Texas & Pacific map. Between Shreveport and Cypress there are two lines. The more northern of these and the one nearer the Arkansas river was formerly a branch but because of its better grades it has more recently been made part of the main line, and the southern line is now operated as a branch.

At New Orleans the Texas & Pacific uses the terminals of the Texas Pacific-Missouri Pacific Terminal, which is owned jointly by the Texas & Pacific and the Missouri Pacific.

The Texas & Pacific uses trackage rights for 92 miles over the Southern Pacific from Sierra Blanca to secure access to El Paso. Texas and Pacific tracks are used by the Missouri Pacific between Alexandria, La., and New Orleans; by the Missouri-Kansas-Texas between Whitesboro, Tex., and Fort Worth, which, because it is part of the Katy main line, puts more traffic over this line than does the Texas & Pacific, and by the Louisiana Railway & Navigation Company of Texas between Waskom, Tex., and Shreveport, La.

Traffic

The Texas & Pacific's three most important classes of tonnage are lumber, oil and fast freight, the last named including particularly perishable vegetables, bananas, California citrus fruits, canned goods, etc.

The traffic was divided in 1923 as follows: Products of agriculture, 23 per cent; products of animals, about 3; products of mines, 18; products of forests, 19; and manufactures and miscellaneous, 34. Petroleum and its products, included in the latter category, made up 11 per cent but was less both actually and comparatively in 1923 than in various preceding years. The lumber originates in Louisiana and eastern Texas. One of the important classes of fast freight on the Texas & Pacific is bananas westbound from New Orleans to Fort Worth and beyond, notably to Denver. A large tonnage of citrus fruit and canned goods is received from the Southern Pacific at El Paso whence it moves over Texas & Pacific rails to Fort Worth where it is delivered to the Rock Island or the Katy for movement to Kansas City, or to Texarkana, where it is turned over principally to the Missouri Pacific. No doubt the recent affiliation with the Gulf Coast Lines will bring in additional traffic in vegetables and citrus fruits moving from the Rio Grande valley to northern points. The Texas & Pacific, of course, originates a sizable volume of agricultural products on its own rails.

On the Texas & Pacific, between Fort Worth and Texarkana, the traffic is predominantly eastbound; between Fort Worth and El Paso, westbound. The road has ruling grades of 1¼ per cent in both directions on the

lines from Shreveport and Texarkana to El Paso. East of Shreveport there are water level grades. The road is using Santa Fe type locomotives of 62,620 lb. tractive effort on various of its heavier freight districts, and has some Mikados of 54,700 lb. tractive force. Lighter locomotives are used on the low grade districts on the eastern end. The road does not have a heavy average train load or car load but the two have shown a steady increase. In 1916, the average revenue train load was 298 tons; in 1923 it was 442 tons.

Additions and Betterments

Reference has already been made to the sums appropriated for additions and betterments during the receivership. These included expenditures for new equipment and an extensive program of rebuilding old equipment. In 1916 the road owned 341 locomotives with an average tractive effort of 25,577 lb. At the end of 1923 it owned 358 with average tractive effort of 34,071 lb. It is interesting to observe that the railroad now owns fewer freight cars than it owned in 1916, the number at the end of 1916 being 10,718 but at the end of 1923, 9,446. The road has a sizable debit per diem balance. During the peak traffic of October, 1923, the per cent of cars on line to ownership was 132.6, and in October, 1924, 119.8. The road has recently ordered 2,000 new box cars. Passenger service on the main line has steel equipment practically entirely. Not long since the road acquired at one time 89 new steel cars; it ordered 13 additional steel cars in 1924. The road uses oil for locomotive fuel. Over a long term of years it has devoted much attention to improving its roadbed which, outside of equipment, has been the factor towards which most of the capital expenditure program has been directed.

Various annual reports for the past few years have had notations concerning the bringing up of certain sections to new standards, such notably as the Texarkana-Longview section in 1916; the Longview-Fort Worth section in 1917, more recently the Shreveport-Cypress line; the section used by the Katy between Whitesboro and Fort Worth, etc. At the end of 1923 of the road's owned track mileage (1,847) 827 was laid with 85-lb. rail, 680 with 75-lb. rail, and the remainder, principally the branch lines, with rail of lighter weight. The ballast is nearly all gravel east of Fort Worth; there is some rock ballast west of that place.

Revenues and Expenses

Texas & Pacific revenues and expenses figures are now available up to and including the first eleven months of 1924. They show that the year was the best in Texas & Pacific history with a single exception, 1917. As compared with 1923, the eleven months figures show an increase in operating revenues of 3 per cent, an increase in maintenance of way expenses of 5 per cent, but a decrease in maintenance of equipment of 11 per cent (reflecting the recovery following the heavy after-the-strike costs of 1923), a decrease of transportation expenses of 1 per cent, and a decrease in total operating expenses of about $\frac{1}{4}$ per cent. The road now has its operating ratio down to 75.5 per cent, and its transportation ratio to 34.1 per cent, comparing with 1923 eleven-months figures of 78.0 and 35.6 respectively.

The net railway operating income for the first eleven months of 1924, totaled \$5,007,457, compared with \$4,423,990 in the same period of 1923, an increase of 13 per cent. For the full year 1923 net operating income was \$5,237,535, the best year since 1917 (\$5,702,230) and comparing with a standard return for operations during federal control of \$4,107,432. Corporate net income in 1923 totaled \$3,433,111, similarly the best year

since 1917 (\$4,236,072). These details help indicate that the Texas & Pacific is in a more prosperous condition than the fact that it has been in receivership would lead one to believe. It is able to show a wide margin over preferred dividends and ready to take its place among the recent increasingly prosperous roads of the Missouri Pacific system.

Operating Statistics

There is given in this article a tabulation of selected operating statistics. They indicate the Texas & Pacific to be another of those few roads whose operating statistics show at a glance—that is, without the necessity of extended analysis often required to learn the true results reflected—a substantial improvement in operating efficiency.

Of particular interest in the tabulation is an increase in net tons per train from 483 in 1920 to 540 in the first ten months of 1924; the remarkable feature of an increase in miles per train hour from 9.3 to no less than 12.3 in the same period, and both reflected in an increase in net ton-miles per train hour from 4,513 in 1920 to 6,618 in 1923. Car miles per car day have increased from 22.2 to 30.6 and fuel-economy is indicated in a decrease in the figure of pounds of coal per 1,000 gross ton-miles, 201 in 1920 and but 138 in 1924. This last figure incidentally was 10 below the country's average for the first ten months of 1924.

Union Pacific Recognizes "Old Timers"

ASOCIAL function of unusual human interest was a dinner given by Carl R. Gray, president of the Union Pacific, at Omaha on the evening of January 15. It was in celebration of the retirement from the service on pensions of four employees whose continuous employment by the company aggregated 213 years. Guests of honor, besides the four retiring employees, included nine other employees, each of whom had been continuously in the service of the railroad over 50 years. The combined service of these 13 employees aggregated 686 years. The guests at the dinner included these and other veterans belonging to the "Union Pacific Old Timers' Club," officers of the road and a few prominent citizens of Omaha.

The four retiring employees were: David L. Mitchell, machinist, who had served the company continuously for 55 years and 5 months; Joseph Kragskow, upholsterer, 55 years, 4 months and 21 days; Parley Mathison, locomotive engineer, 50 years and 9 months, and Alexander Catherwood, section foreman, 52 years. Mr. Catherwood served as foreman of one section continuously for 35 years. Other "old timers" who were among Mr. Gray's guests and their periods of continuous service were as follows: Fred V. Trott, coach carpenter, 51 years; Terence Boyle, clerk, 52 years and 11 months; John Sheahan, machinist, 52 years and 1 month; Thomas Dugdale, pattern maker, 52 years; Thomas B. McMillian, hammer operator, 53 years and 6 months; William H. Mulcahy, foreman, 42 years and 7 months; Louis Demson, engineer, 53 years and 1 month; James E. Carroll, engineer, 50 years and 2 months; Frank Gunnell, engineer, 52 years.

Edson Rich, general solicitor of the company, acted as toastmaster. E. E. Calvin, vice-president in charge of operation, who entered the service of the Union Pacific as a telegraph operator in 1877, although his service with

the road has not been continuous, was the first speaker, and pointed out the significant loyalty to the company indicated by the long periods the guests of honor and other old timers present had been in its service. General Manager W. M. Jeffers, who has himself been continuously in the service of the company for 35 years and who was the next speaker, stated that he reserved for himself one right and duty in the "Old Timers' Club" and that was the right to present old timers' buttons to the veterans. He then performed the ceremony of pinning the button upon each of those present who had been in continuous service 50 years or more.

President Carl R. Gray called attention to the enormous development of the Union Pacific system which had occurred since the oldest of the veterans in point of service had entered its employ. Its mileage in 1870 was 1,831 and in 1923, 9,500. Its gross earnings had increased from \$7,600,000 to \$211,000,000; locomotives owned from 150 to 1,955; total number of cars owned from 2,581 to 1,388 passenger cars and 55,441 freight cars; passengers carried from 142,623 to 6,090,985; ton-miles from 71,779,000 to 14,852,783,000. The number

minded them that they would have annual transportation for life and told them the company would be glad to have their passes used so much that they would soon wear out their suit cases traveling over the road. He sent a special message and flowers to Thomas O'Donnell, the only employee of the railroad (now retired) who saw President Lincoln drive the silver spike at Ogden on the completion of the railroad, and who was unable to be present.

Chicago Traffic Club Holds Annual Dinner

THE annual dinner of the Traffic Club of Chicago which was held on January 15 in the Hotel LaSalle, Chicago, was attended by 900 transportation and industrial traffic men. The speakers of the evening were Robert E. M. Cowie, president of the American Railway Express Company, who spoke on a



Officers and "Old Timers" Employees of Union Pacific

Photograph taken at main entrance to general office building, Omaha, with the following in front row in order, reading from left to right: C. R. Gray, president (second from left); Parley Mathison, locomotive engineer; Joseph Kragskow, upholsterer; W. M. Jeffers, general manager; David L. Mitchell, machinist; Alexander Catherwood, section foreman, and E. E. Galvin, vice-president.

of miles of railroad in the country when David L. Mitchell became an employee of the Union Pacific was only 53,000 miles.

Edwin D. White, who is in charge of the pension system and personnel work of the company, emphasized the good relations that had always prevailed between the company and its employees. Mr. Jeffers, as illustrating this point, recalled that when the railways were under government operation, not a single dispute between the Union Pacific and its employees had ever gone to one of the adjustment boards in Washington for settlement. Mr. White recalled that when the "Old Timers' Club" was organized Mr. Jeffers had stipulated that no officer of the company should ever be an officer of the club and that Mr. Gray had added that it should be understood that officers who became members of the club should "check their brass collars at the door."

In concluding his address, President Gray presented to each of the retiring employees a handsome suit case, re-

"Timely Topic Talk," and Strickland Gilliland, humorist and author of Baltimore, Md., who spoke on "Getting Common Like Other Carriers."

Mr. Cowie outlined the developments of the express business, showing how it has developed along with the railroads. His address in part is as follows:

"It is just 80 years ago since the express business first saw the light of day in the person of William F. Harndon with a haversack slung across his shoulders, traveling out of the city of Boston to the surrounding communities of that great commonwealth, performing the errands and commissions for the business people and the private families of that city. The American Railway Express Company now maintains a service upon 266,000 miles of railroad extending from Maine to California and from Duluth to New Orleans. We maintain offices in 28,500 cities in this country or in every city, town, village and hamlet that is found on the map or in any of the guides that are sold for the information of the shipping public."

Our traffic consists of hundreds of millions of shipments per annum. The American Railway Express Company, in the transaction of its business, issues more waybills every day in the year than all of the railroads in the United States combined.

"In order to handle this enormous traffic the American Railway Express Company today utilizes in excess of 8,500 motor vehicles and 12,500 horse-drawn vehicles. We have upon our payrolls during the peak periods from 125,000 to 135,000 employees, of which 74,000 are subject to the decisions of the United States Railroad Labor Board.

There are only two railroads in the United States which have more employees subject to the decisions of

the Labor Board than the American Railway Express Company, the Pennsylvania, and the New York Central. The payroll runs well in excess of \$150,000,000 a year.

"The express business is a public service for which you pay and you are entitled for the money you pay, to the highest possible standard of service. There was a time when the express people, and I do not put it beyond the railroad people, were very ingenuous in their excuses for lapses of service, and for failure of efficiency. The people with whom we dealt followed the same practice. Now those days have past and they are back of us. No more can the transportation companies put over alibis and excuses; they know that their service has to be as near 100 per cent efficient as it is possible to make it."

Hearing on Government Interest Rate

J. H. HUSTIS, president of the Boston & Maine, E. G. Buckland, vice-president of the New York, New Haven & Hartford, and J. D. Shatford, chairman of the Railroad Owners' Association, testified before the Senate committee on interstate commerce on January 15 in support of the bill to reduce the interest rate on railroad indebtedness to the government. At the conclusion of the hearing Alfred P. Thom, general counsel of the Association of Railway Executives, suggested that the committee adopt the suggestion made by Secretary Mellon that the rate be fixed at 4 3/4 per cent rather than consider a possible argument for a slightly lower rate, in order to avoid any debate or controversy that might cause a difference between the House and the Senate that might jeopardize the passage of the bill in the comparatively short time remaining of this session. He said that Mr. Mellon would doubtless make the same suggestion to the House and that he did not want to raise any issue with the Treasury, and that it would be an advantage if both houses of Congress should pass the bill in the same form. Senator Gooding said that 1/4 per cent is enough profit for the government to make, that that amounts to \$875,000 a year, and that "if we are going to give relief, let's give relief."

Mr. Hustis and Mr. Buckland, after outlining the financial situation of their respective roads and the reasons why they had incurred so large an indebtedness to the government, considered the bill as of importance in reducing their fixed charges to an amount more in keeping with the going rate of interest and as of assistance to them in their financing rather than as something required to meet a present emergency. Mr. Hustis said that the reduction would save his company about \$275,000 a year, as the bill applies only to its loans from the revolving fund, which would be important in improving its credit situation, but in reply to a question he said he had no fear of a receivership.

The importance of this bill to the Boston & Maine, Mr. Hustis said, will be evident from the statement that the government now holds the 6 per cent mortgage bonds of this company to the par value of \$48,685,479, on which the annual interest charge is \$2,921,128. These loans represent 36 per cent of the total funded debt of the company, but the interest charge represents 43 per cent of the total interest requirements on funded debt.

For all of these properties covered by the federal valuation, the combined tentative valuation found by the commission was \$248,469,987 as of the date of valuation. When allowance is made for the additions to the property

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since the valuation date, for the increase in value of materials and cash, and for certain minor parts of the system not covered by the valuation, the total as of December 31, 1923, becomes \$288,316,071. This is comparable with a book investment figure as of the same date of \$262,315,354, and with a total net capitalization outstanding in the hands of the public of \$224,762,360.

Beginning in 1909, the rate of dividend on common stock was reduced, and since 1913 no dividends have been paid on this stock.

During the temporary receivership, the property was taken over by the President and with the co-operation of the director general a plan of re-organization and consolidation was made effective. The stockholders of the most important leased lines, whose dividends were guaranteed to the extent of over \$2,500,000 a year, exchanged this stock for first preferred stock of the re-organized company without guaranty, and with a reduction in dividend rate for five years. The director general advanced the funds necessary to meet the floating indebtedness and to provide necessary improvements to the property during federal control. A general mortgage was placed on the property under which bonds were issued to the director general, and under which the outstanding indebtedness of the Boston & Maine and its most important leased lines was also secured. The re-organization was accomplished on December 1, 1919, as of January 1, 1919. Dividends on the first preferred stocks were paid in 1919 and the first half of 1920, since which time no dividends have been paid on any class of Boston & Maine stock.

With no floating debt, and with the reduction of over \$2,500,000 in fixed charges, it was expected that the credit of the Boston & Maine would be restored, but although nearly four years have elapsed since the termination of federal control, this expectation has not been realized.

Even prior to federal control, the margin between revenues and expenses on the Boston & Maine was insufficient, Mr. Hustis said, one reason being that the divisions of through freight rates did not make proper allowance for the cost of service on a terminal road with relatively light traffic density. The effort made during the past four years has finally resulted in substantial re-adjustments of divisions, partly by decision of the Interstate Commerce Commission, and partly through voluntary action of connecting lines.

During all of this period the property has been constantly improved. Expenditures have been made at the rate of from four to five million dollars per year. Such earnings as have been available have been put into the

property, but these were inadequate, and it has been necessary to rely on the government for the funds for necessary improvements and for refunding of maturing indebtedness.

The Boston & Maine and its leased lines have a total funded debt of \$135,581,679, of which \$48,685,479 is held by the government. Of this total, \$26,980,000 was taken by the director general and \$21,705,479 was authorized by the Interstate Commerce Commission under Section 210 of the Transportation Act. Of the balance of \$86,896,200, the sum of \$4,996,200 represents equipment trust notes originally purchased by the director general but subsequently sold by him. These notes bear 6 per cent interest, and a few other issues bear rates of $5\frac{1}{2}$ and 6 per cent and, in the case of one small issue, 7 per cent. These higher rates were due to unusual conditions at the time of issue and the bulk of outstanding bonds, other than those held by the government, bear rates of $3\frac{1}{2}$, 4 and $4\frac{1}{2}$ per cent, and in one case, 3 per cent. The average rate on all bond issues other than government loans is 4.5 per cent. If this average were increased to 6 per cent, the effect would be to increase the annual interest charges of the Boston & Maine by over \$1,300,000.

It is important that credit be restored, Mr. Hustis said, not only in order that necessary funds may be available for improvements to the property, but that maturing obligations may be funded at reasonable rates. During the next 10 years, obligations to the total of \$102,012,479 will mature, of which \$43,685,479 are represented by government loans. At the present time, committees representing various groups of security holders are endeavoring to develop a plan which will be helpful in meeting this problem.

It is expected that operating results of 1924 will show a surplus after charges of about \$1,500,000, which is better than any year since the war. This surplus, however, means less than $3\frac{1}{2}$ per cent return on the property investment. Out of this $3\frac{1}{2}$ per cent return, it is necessary to pay 6 per cent on that portion of the funded debt held by the government, and the balance after interest charges amounts to less than 2 per cent on the total capital stock. If it were necessary to pay 6 per cent on all of the funded debt, there would be practically no balance left on the stock, most of which represents an investment much greater than the par value.

Strengthening Necessary Railroads

"Various provisions of the Transportation Act, including those affected by the bill under consideration, were designed for the purpose of retaining and strengthening all railroads which are essential to the communities which they serve," Mr. Hustis said. "These provisions included protective features, so that the assistance rendered these railroads might be without cost or undue risk to the government. This assistance was certainly not intended to be a source of profit to the government. If the cost of money to the government is assumed to be $4\frac{1}{4}$ per cent, it can be computed that the difference of $1\frac{3}{4}$ per cent between this and a 6 per cent rate on the loans of over \$48,000,000 to the Boston & Maine, would if compounded at 6 per cent, amount to over \$11,500,000 in 10 years. This amount represents the additional cost to the Boston & Maine over this period of a 6 per cent rate as compared with a $4\frac{1}{4}$ per cent rate.

"Moreover, when the Transportation Act was passed, it included provisions for a fair return which, subject to the discretion of the Interstate Commerce Commission, might be 6 per cent. The act also provided that excess earnings should not be figured until after a 6 per cent return had been reached. At no time has this figure been attained, even by railroads as a whole, and the rate of

return on the Boston & Maine since the Transportation Act was passed has been far below this figure. In 1921 nothing was earned on the property; in 1922 the rate of return was 2.72 per cent; in 1923, 1.21 per cent; and in 1924 it will be about 3.50 per cent.

"The restoration of credit is important for the Boston & Maine in order that it may provide funds for improvements and refunding at reasonable rates. It is equally important to the government that the Boston & Maine should be in a position to meet its financial requirements through normal channels so that the obligations now held by the government may in due time be assumed by the private investor."

New Haven Capitalization

Mr. Buckland said the capital stock of the New Haven amounts to \$157,000,000, much of which was sold at a premium, and its funded debt to \$360,000,000, all of which was sold at par or better, and it owes the government about \$91,000,000. Of this \$43,000,000 represents a loan made by Director General McAdoo shortly after the road was taken under federal control, at a time when it was already securing subscriptions to a 7 per cent preferred stock issue to take care of floating indebtedness. The government officers did not wish the company to proceed with the stock issue because of the possible interference with the sale of Liberty bonds in New England and the director general agreed to lend the money on good collateral security. The indebtedness to the government for additions and betterments made during federal control amounted to \$17,000,000 and there were also some loans from the revolving fund, in addition to \$4,000,000 of unpaid interest which had been added to the amount. Prior to federal control, Mr. Buckland said, the company had always earned a net income but since federal control it has done so only in one year, 1924. When the property was returned by the government its earning power had been depleted and its equipment was in a deplorable condition but the road is now in a position to finance its own requirements, although he was not sure it would be able to refund its debt to the government without the improvement in its credit which should result from the reduction in the interest rate. The proposed reduction in the rate would amount to about \$1,120,000 for the New Haven and the average rate on its funded debt other than government indebtedness is now slightly under 5 per cent.

Mr. Shatford pointed out that in the last two and one-half years the amount of interest paid by the St. Paul, the Boston & Maine and the New Haven in excess of $4\frac{1}{2}$ per cent amounted to \$5,500,000, or double the amount which Secretary Mellon had mentioned as the possible loss to the government on all the loans made to carriers. There is no occasion, he said, for the government to ask 6 per cent interest when it can get the money for $4\frac{1}{4}$ and the relief that would be afforded to the railroads by a reduction would have widespread effects beneficial to the public. He said that in 1923 he had urged a reduction, in correspondence with Secretary Mellon, who had replied that the Treasury would not be inclined to object to legislation proposing a reduction and if it were proposed would give it careful consideration. He did not consider that the railroads were asking any contribution from the government but only that the government forego a banking profit, and he said that the roads were largely owned by small holders who had had no dividends for several years.

After efforts to get a meeting of the committee to pass on the bill on Saturday, Monday and Tuesday it was decided on Tuesday that the committee should have an executive session on Wednesday with Commissioners Meyer, Eastman and Potter of the Interstate Commerce Commission, Division 4.

The New Era for Steam Locomotives

*Recent developments and those of the future are discussed
by New York Railroad Club*

THE New Era in Steam Locomotive Development was the theme of the meeting of the New York Railroad Club held on January 16. Several recent developments of unusual interest were described and their characteristics discussed and some of the possibilities for further development in the immediate future set forth in considerable detail. The program consisted of seven short papers, each dealing with a single phase of the general subject. Abstracts or summaries of these papers are given below.

What the "Horatio Allen" Is Doing in Service

By John E. Muhlfeld
Consulting Engineer

After a general discussion of locomotive design, in which he commented briefly on the numerous developments now under way in various parts of the world which depart from conventional design, Mr. Muhlfeld took up the experience of the Delaware & Hudson with the performance and maintenance of the "Horatio Allen," otherwise designated as locomotive No. 1400. This locomotive has a water tube firebox and fire tube boiler barrel, generating steam at 350 lb. working pressure and using it in cross-compound cylinders with an expansion ratio of 3 to 1. The locomotive is of the Consolidation type with weights averaging 74,600 lb. per pair of drivers. Its calculated tractive force is 70,300 lb. compound, with a factor of adhesion 4.25, and 84,300 lb. simple, with a factor of adhesion of 3.54. The calculated horsepower of the cylinders is about 3,000 and of the boiler about 3,565, thus giving a boiler ratio of 119 per cent. "With respect to the total weight of the simple locomotive," said Mr. Muhlfeld, "this may properly be criticized as being too high. However, my experience has been that it is better to have too much weight in motive power and keep it in useful service earning money, than too little weight and have it in the back shop or enginehouse spending money and tying up traffic."

Operating Results

The locomotive is operating between Oneonta, N. Y., and Mechanicville, a distance of about 87 miles where, northbound, with the flow of heaviest tonnage, the ruling grades are .8 per cent on Schoharie hill for a distance of about 6 miles, and .77 per cent on Crescent hill for a distance of about 2½ miles. Southbound, the ruling pull is Richmondville hill, with a 1.45 per cent grade for 3 miles, followed by a 1.42 per cent grade for 4 miles to the summit. The locomotive has made between 7,500 and 8,000 miles with tonnage trains and is still being operated under a break-in speed limit order of 25 miles an hour, which gives a piston speed between 700 and 750 ft. per min. Mr. Muhlfeld stated that at this speed, which is unfavorable from an operating standpoint, a combination of a moderate degree of superheat and multiple expansion has proved more economical than a combination of relatively high speed and single expansion in any other Consolidation type locomotives performing similar service at speed limits of from 35 to 45 miles an hour.

With its speed limited to 25 miles an hour, Mr. Muhlfeld said that it makes the trip over the division in less time than the other superheated single expansion type locomotives which operate at from 35 to 45 miles an hour. As an example, he cited the run on October 18, 1924, when the "Horatio Allen" handled a train of 50 cars, 13,027 adjusted tons, over the Richmondville hill, for a total up-grade pull of 19 miles with drawbar pulls ranging between 40,000 lb. and 51,000 lb., in a running time of about 50 min. He also cited a run on January 10 when the "Horatio Allen" handled a train of 47 loads, 34,037 adjusted tons, southbound, making the 87-mile in 7 hr. 35 min., using between eight and nine tons of coal. The temperature was four degrees below zero and other locomotives were operating at that time under a 10 per cent reduced train load. During this trip, on Schoharie hill, while operating at four miles an hour and developing 68,000 lb. drawbar pull, compound, the booster was cut in and the drawbar pull was increased to 78,000 lb. and the speed to five miles an hour. The booster was then cut and the drawbar pull reduced to 65,000 lb., compound. The locomotive was then worked simple and the drawbar pull increased to 78,000 lb. and the speed to six miles an hour. The locomotive was then worked compound, developing 69,000 lb. drawbar pull at a speed of six miles an hour. On this same hill, northbound, a drawbar pull of 75,000 lb. has been developed, working compound, with a receiver pressure of 97 lb. When simple and developing 95,000 lb. drawbar pull, he said the receiver pressure has in some cases gone up to 110 lb.

Mr. Muhlfeld said that the average time of the "Horatio Allen" to move tonnage trains between Oneonta and Mechanicville during the existing winter weather is about 8 hr. northbound and 6½ hr. southbound, using from eight to nine tons of coal northbound.

Maintenance

Mr. Muhlfeld gave in considerable detail the conditions which have been found to exist with respect to most of the details of the locomotive under service conditions. A summary of some of the important parts follows:

The boiler, he said, was hydrostatically tested to 450 lb. and fire-steam tested to 420 lb., a careful check showing the expansion of the various parts of the boiler in relation to each other and of the boiler as a whole to be very satisfactory. No leaks have developed in connection with the fire tubes or flues or the cylindrical shell, the water leg headers and the steam and water drums. Some trouble was experienced at the outset in making the joints of the outside firebox covering, but suitable modifications have permanently corrected this difficulty. The locomotive is equipped with a desaturator, the drain check from which has given some trouble which is being corrected by a more suitable design and material. The performance to date, Mr. Muhlfeld said, left some question as to whether the desaturator was necessary on this type of boiler. The Duplex low and high pressure throttle valve and rigging, he said, work perfectly.

There has been no valve or cylinder packing, bushing, piston head or piston rod packing trouble and no more attention is expected in this regard than with the ordinary single expansion type locomotives operating under 200

lb. pressure. Waste of steam at the pop valves has given some concern, both when working steam and when drifting. This is now controlled through the regulating of ash-pan dampers. Considerable trouble has been experienced with the reflex type water gage glasses breaking, probably due to extreme temperature changes. As this has not been experienced in stationary boiler service where higher pressures and temperatures are used, Mr. Muhlfeld expects that a new design the manufacturers are now developing, will overcome this difficulty.

The application of an interbearing driving box brass to the main boxes, similar to that used on three-cylinder locomotives, he said, had substantially overcome a tendency to develop the pound in these journals which was evident in the early operation of the locomotive. The engine tends to run to the left, toward the low pressure cylinder, cutting the leading truck wheel tire. The cause for this, he said, had not yet been determined. The distribution of power between the high and low pressure cylinders is satisfactory, except at speeds between 12 and 18 miles an hour. Mr. Muhlfeld said that intercepting valve and valve motion changes would probably correct this. With eight tons of coal, he said, the "Horatio Allen" can move the same tonnage between Oneonta and Mechanicville northbound as two smaller superheated single expansion Consolidation locomotives, using 12 tons of coal, the fuel used ranging from straight run-of-mine bituminous to a mixture of 60 per cent bituminous and 40 per cent buck anthracite.

With respect to the care of the boiler, Mr. Muhlfeld said that on November 2, 1924, the boiler was washed out in the enginehouse, the total time required to complete the job being 12 hr. An inspection at that time showed that the top drums, longitudinal and vertical water tubes and arch tubes were clean, while the bottom drums and boiler shell had a slight accumulation of mud. The disposition of the sediment as found at wash out periods, Mr. Muhlfeld said, was evidence that the water circulation is very active, particularly through the vertical water tubes between the lower and upper drums.

The Characteristics of the Three-Cylinder Locomotive

By James Partington

Estimating Engineer, American Locomotive Company

The history of locomotive development in the last two decades, has shown that the limit of locomotives is primarily defined by what the railroads are permitted to carry in weight per axle. This has made it necessary for roads which have been operating with passenger locomotives having four drivers, to increase to six drivers and eventually to increase to eight drivers; in freight service to increase from six to eight, in some cases to ten, and in other cases to have recourse to Mallet locomotives.

One point that I wish to stress is that the application of three cylinders in place of two can be employed in conjunction with all of the other improvements or adjuncts that are determined on as being necessary or advantageous or successful on present steam locomotives. The outstanding point of the three-cylinder locomotive is the fact that the torque curve of the locomotive is considerably smoothed down by the application of the power at an angle of 120 degrees. This fact makes it possible to reduce the factor of adhesion, roughly from 4.25 to about 3.7 and obtain equally good traction results. This is of great importance because the limiting factor on most roads is the allowable weight per pair of drivers.

With the application of three cylinders the dynamic

augment can be very materially reduced for a locomotive of like power. The engineers of the country today are realizing more and more that their track conditions must be studied, not only from the standpoint of the static weight of the locomotive, but from that of the combined static weight and dynamic augment. The use of outside cylinders, somewhat smaller in the three-cylinder locomotive than in the two-cylinder locomotive makes it unnecessary to have as great an amount of unbalanced counterbalance to take care of balancing the reciprocating parts. Thus, the disturbing element, is very considerably reduced in the three-cylinder locomotive.

Another point, which bears to some extent on the size of the fire box, is the effect of six exhausts instead of four to one revolution of the drivers. This is better in that it produces a more uniform draft on the fire and the combustion is correspondingly improved.

Three cylinder locomotives are coming into service on a considerable number of our railroads, and it will probably be but a short time before much more definite data is secured than we have at this time. The fact that these locomotives show in performance, in comparison with two-cylinder locomotives, that they are hauling heavier trains than a comparison of the tractive forces would indicate they should haul, would seem to show that the application of three cylinders with some of the engine effort applied at the center line of the locomotive rather than at a point very much overhung from the rail line is probably resulting in less engine friction than we have in two-cylinder locomotives. And it may be that results, when they are obtained, to an extensive enough degree, will show that engine friction in three-cylinder locomotives can be computed at a lower figure than in two-cylinder locomotives. Three cylinders are being applied on a number of different types of locomotives, and results will soon be obtainable from different classes of service.

The Demand for Increased Horsepower

By W. E. Woodward

Vice-President, Lima Locomotive Works, Inc.

Railway operating officers have for some time realized the importance of increased horsepower output from their locomotives as a factor in improving their operating conditions. This is known to them under different names. The operating man may see it in ton-mile-hours; it may become evident to him in increased speed of trains or increase in the number of cars per train, but every such increase means to him a decreased operating ratio and greater capacity for his line. It speeds up his operation.

A little over two years ago one of our largest railway systems received a locomotive which was built for them for trial purposes. This was tried out on several divisions for eight or ten weeks. Its operations were watched by the operating department as well as the mechanical department. At present there are over 300 locomotives of this class operating on this road. The average freight train speed in one of the districts of this system before the introduction of the new class of locomotives was 12½ miles an hour. The new class of locomotives almost doubled this average with no decrease in tons per train. These engines became at once not only very well liked by the operating officers, but by the crews. It shortened their day's work.

Railways want to get such increases in ton-miles as I have just referred to. It means money to them. So, we are coming to a time when railway men will begin to think about the horsepower of their locomotives instead

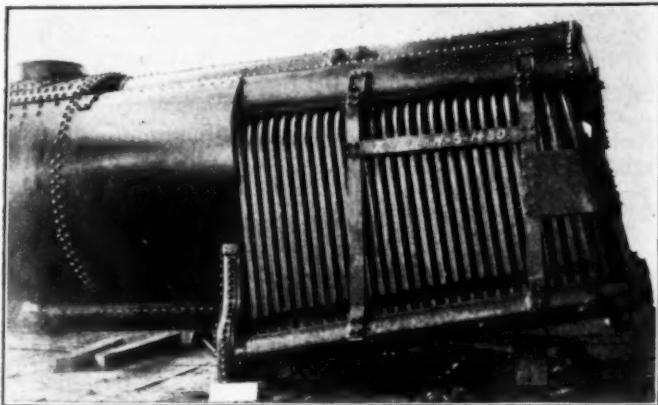
of their tractive force, because, after all, it is the horse-power that does the work.

For example, a locomotive giving 50,000 lb. tractive force at five miles an hour develops only 670 hp. One giving 50,000 lb. tractive force at 15 miles an hour develops 2,000 hp. in the cylinders; 25,000 lb. at 45 miles an hour means 3,000 hp. It is the pull at speeds that counts.

What are the railway designers and the locomotive designers and builders doing about this? The use of higher steam pressure is one way in which this demand is being met. Another significant effort is the introduction of the three-cylinder locomotive. There is another method which perhaps is not receiving as much thought as it ought to. It is the use of limited cut-off in the cylinders to produce high horsepower. The use of the limited cut-off principle not only gives decided advantages in fuel economy at the lower speeds, but it results in very significant increases in capacity at the higher speeds.

So far, I have spoken of the developments which are under way in the engine end of the locomotive for the purpose of increasing its horsepower output. It is idle to design a fine engine and driving mechanism without proper means to feed it. There are many locomotives capable of producing 3,000 or more cylinder horsepower. This calls for at least 7,500 lb. of coal an hour and probably nearer 9,000. When we come to burn coal in these amounts, it is the grate area that counts. It may be urged that it is only once in a while that the locomotive reaches its peak load, but as a matter of fact, under modern operating conditions engines are pushed to their limits for long periods. Not long ago on a test I was surprised to find that for over 45 min. the locomotive was being operated at the rate of 135 lb. of coal per sq. ft. of grate area per hour. I saw the performance repeated several times for shorter intervals.

Twenty-five years ago there was no considerable number of locomotives operating with trailer trucks. Grates were being pushed to their limits, sometimes burning coal at as high a rate as 200 lb. per sq. ft. of grate per hour. Trailer trucks were introduced; the wide fire-box came



The McClellon Firebox—The H Frame Adds to Its Structural Rigidity

into use and the limitation was removed. We have again come to the same point in the evolution of the locomotive; we have reached the limit of the grate which we can carry on a two-wheel trailing truck. We want more power and properly so. This means bigger grate areas. So we are ready for the next step, which is the four-wheel trailer and the big firebox.

My vision of the locomotive of the near future is one with high boiler pressure, cylinders capable of developing 3,000 to 3,500 hp., with a boiler and firebox which

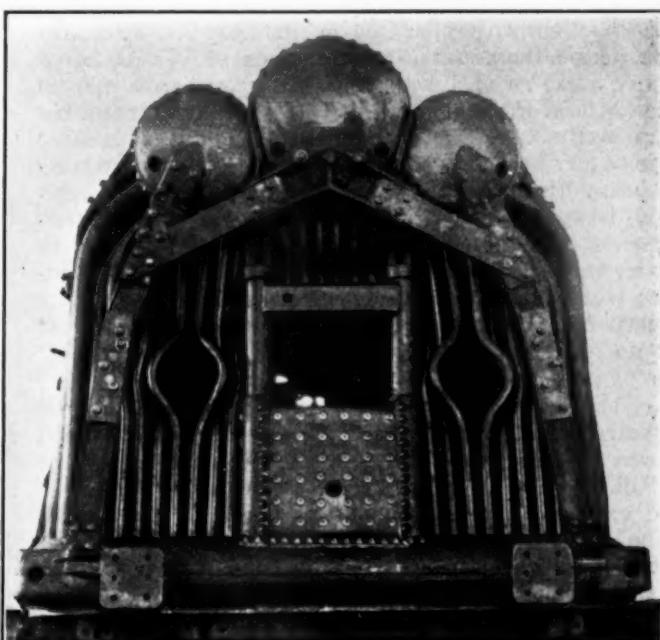
are capable of producing an adequate amount of steam for the cylinders in an economical manner. Such locomotives will have larger fireboxes than we are accustomed to use. The coal will be burned at a low rate of combustion, giving a high boiler efficiency. They will have large gas area through the flues and tubes to match the firebox. They will produce these high horsepowers at relatively low rates of steam consumption. Such engines are not a dream; they will soon be here.

The McClellon Firebox

By W. L. Bean

Assistant Mechanical Manager, New York, New Haven & Hartford

After a brief reference to an eight-wheel switching, three-cylinder locomotive, which the New York, New Haven & Hartford has recently placed in service, the early operation of which has been very satisfactory, Mr. Bean briefly described a new 4-8-2 locomotive recently



Rear End of the New McClellon Firebox, with the Cross Frame Member, Which Forms the Door and Stoker Openings, Removed

built by the American Locomotive Company for the N. Y., N. H. & H., which is equipped with a McClellon type water tube firebox and cylinders with 70 per cent maximum cut-off. In describing the boiler of this locomotive, Mr. Bean showed a number of slides, a few of which are here reproduced. He characterized the service of the two locomotives with the McClellon type fireboxes which have been in use nine years, as highly satisfactory, saying that they required considerably less firebox work than the customary stayed type firebox. One of the principal alterations which the experience with the two earlier locomotives has suggested is the use of a frame connecting the foundation ring and top drums to give greater structural rigidity. Mr. Bean stated that no difficulty has been experienced with the air-tight casing which encloses the water tubes and which is applied in plastic form, and over which the regular lagging and jacket is placed. He called attention to the fact that less radiation is apparent from this firebox than from the usual type.

The illustrations show in a general way how the firebox is formed. The principal point, not clearly shown,

is the trough which connects the rear barrel of the boiler with the water leg at the throat of the firebox and from which tubes pass up through the combustion chamber enclosed within the fire shell between the tube sheet and the firebox, to the top header drums. The foundation ring in the new locomotive is of cast steel, differing from the original design in which riveted plate construction was used.

Freight Locomotives

Improving in Efficiency

By C. B. Peck

Mechanical Department Editor, *Railway Age*

Back in 1921 the *Railway Age* made a study of the trend of locomotive utilization from 1902 down to 1920, based on the annual figures compiled by the Interstate Commerce Commission. This study showed, briefly, a remarkably steady rate of increase in the average tractive effort of freight locomotives from about 25,000 lb. in 1902 to slightly over 42,000 lb. in 1920. During this same period the ton-mile performance per 1,000 lb. of tractive force showed a slight tendency to decrease from one peak year to the next until 1917 when there was a big jump in the ton-mile performance per unit of hauling capacity corresponding to the tremendous increase in traffic during that year. The interesting thing about this study, however, was the fact that while the ton-mile performance increased, this was apparently due entirely to heavier train loading and not to any increase in the train-miles secured from each freight locomotive, because the number of train-miles per freight locomotive per year was no greater in 1917 than in 1913, the last preceding year of peak traffic.

Let us now consider a few of the peak months during the years since 1920, beginning with October, 1920, which showed the largest gross ton-mileage in that year. The 87 billion ton-miles handled in that month has only since been exceeded twice, once in October, 1923, with 92.6 billion, and in October, 1924, with 94.7 billion. The October, 1920, business required 57 million train-miles, with an average train load of 1,511 tons, while that of October, 1923, required 58 million train miles with only a slight increase of 73 tons in the average train load. In October, 1924, the train mileage had dropped back to slightly less than 56 million because of an increase in the average train load, which for this month was 1,693 tons. As there were some 3,000 more locomotives available for service in 1924 the average freight train-mileage per freight locomotive owned had dropped considerably below that obtained either in October, 1920, or October, 1923. The locomotive capacity of the country was far from being overtaxed during this period as there were over 3,000 serviceable freight locomotives stored in October, 1924, as against only 1,865 in the previous October and only about 400 in October, 1920.

It is evident, then, that taking the country as a whole, no improvement has been effected toward a more intensive utilization of the available freight locomotive capacity, and it is also evident that a considerable increase in business will have to take place before the present locomotive capacity will be utilized to the same extent that it was during the heavy traffic period of 1920. However, without the replacement of some of the locomotives reported as stored serviceable, by new and more economical locomotives, the same efficiency and economy of performance shown during the past year could not be obtained if all these locomotives were brought into service.

Two interesting and significant facts related to this point stand out clearly in the performance figures for the railroads as a whole. One of these is the marked increase in gross ton-miles per train hour which has been taking place during the last two or three years, and the other is the economy in the use of coal which has taken place during the last year. Average figures for gross ton-miles per train-hour are usually expected to drop off as business picks up, because of the tendency for the average freight train speed to decrease, usually to little more than 10 miles an hour, with the increased number of train movements.

Since May, 1923, there have been very few months in which the average freight train speed has dropped below 11 miles an hour and there have been but two or three months in which the average gross ton-miles per train hour has dropped below 17,000. From August to October, 1924, inclusive, it has exceeded 19,000, this large figure being the result both of increased train load and sustained speed. This means much in added capacity of road facilities and indeed is probably the result of improvements at innumerable critical points of congestion and the operation of better and more powerful locomotives all over the country. It does not necessarily indicate high running speed, but reduced delays and the elimination of the waste expense which these delays entail.

It indicates that far better results are being obtained from the locomotives while they are on the road. The trouble is that they are not on the road enough.

The figures showing the amount of coal consumed per 1,000 gross ton-miles are just as striking as those for the train-hour performance just referred to. Back in 1920 the coal consumption per 1,000 gross ton-miles ran from 170 lb. to 190 lb. It took 186 lb. in October, the month of peak traffic during that year. Coming down a year later, it still required around 170 lb. of coal to produce 1,000 gross ton-miles. During 1923, however, a marked improvement was evident. For instance, in April the average was 164 lb. and it decreased to 143 lb. in July. From there on there was a slight tendency toward an increase which reached 153 lb. during the peak month of October. The winter months, of course, were higher, but by May, 1924, the average had again been reduced to 143 lb., about the best figure obtained during the preceding year. From there up to October, the coal consumption consistently remained under 140 lb. and in October was 138 lb., which is 15 lb. less per 1,000 gross ton-miles than in the preceding October. This is a splendid performance which means a saving of real money to the railroads.

It is evident that the steam locomotive is constantly becoming a far more effective and efficient producer of transportation. It is also evident that there is yet much to be done in bringing about a more intensive utilization of its time. A discussion of how this is to be done immediately develops into a discussion of shop and terminal improvements.

More Tests Needed

to Aid Development

By W. H. Winterrowd

Assistant to the President, Lima Locomotive Works, Inc.

During the past two years the railroads of this country have had to handle the greatest peak loads in their histories. They have accomplished this with capacity to spare. How this has been accomplished is best known to those who are familiar with the work of the

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American Railway Association under the leadership of R. H. Aishton.

As last year's record proved that the existing plant of the railroads as a whole was adequate to handle all traffic offered them, the question may be raised as to any necessity for super-power steam locomotives. This question is clearly answered in the January 12 issue of the *Analyst* in an editorial entitled, "The Business Outlook." The editor states: "Last year's transportation record proved that the existing plant of the railroads as a whole was adequate to handle promptly all the traffic offered them.

But the attempt to keep the percentage of net earnings up, in face of declining gross receipts, has shown the saving capabilities of new equipment of many sorts; and especially the economy attainable by substituting new, more powerful and more economical locomotives for many of those now in use. New and better motive power has resulted in the discarding of from two to ten or more old engines for each of the newer ones installed, for example. There is thus a motive for railroad purchases which is independent of boom influences."

Increased Capacity Not Enough

New locomotives of increased capacity lend themselves easily to improved operating records. But mere increase in capacity is not enough. An efficient motive power policy demands that new locomotives should provide the greatest possible capacity with the greatest possible efficiency under the imposed conditions of operation. Is there any reason why those responsible for operation should not avail themselves of motive power that will earn a maximum return on the investment?

This brings up the question, Are the facts of general locomotive development and performance always available in such form that the railway executive has at hand prompt and dependable information on which to base his motive power policy?

I wish to emphasize the importance of definite, reliable data regarding efficiency, not only of the older locomotives but the modern types as well. Is it unreasonable to suggest that after any new type goes into service, prompt and thorough effort should be made to ascertain scientifically and practically, the interest that they will return on the investment as well as what they make possible in the way of future development? In this country there are several testing plants, that have all rendered excellent service. The information obtained and made public as a result of the tests on the Pennsylvania test plant has been of incalculable value to the railroads of this country in general.

Remarkable Period of Development

The steam locomotive is entering a period of remarkable development. As we progress, let us ascertain without delay the scientific and practical facts. Sound and consistent progress depends on it. There are many problems today awaiting solution on this basis. There are locomotive testing plants available on which much valuable comparative information can be produced. There are also problems that can be solved in road test service if the facts are obtained in a manner which can be absolutely depended upon.

May I emphasize not only the publicity that is desirable in connection with such facts, but the importance of their being presented in such manner that they are capable of intelligent interpretation in the light of efficient and economical railroad operation?

Locomotive No Better Than Boiler

By C. A. Seley

Consulting Engineer, Locomotive Firebox Company

Mr. Seley spoke of the efforts made to promote efficiency in locomotive operation and laid particular stress on the study and development of the locomotive boiler. The following is an abstract of his remarks:

It used to be that the bulk of the boiler water was not very far from the fire, but the increase in the number of wheels resulted in lengthening the boiler as well as increasing the girth. There is not much difference between modern locomotives and old ones in the ratios used for grate areas and heating surfaces in fire boxes and flues. The superheating equipment, while considered a part of the boiler, is not, in reality, a part of it as its work is done after the steam has been manufactured by the boiler heating surface.

The question of prime importance, however, is how to produce the most evaporation per pound of fuel. Its solution is nearly as important as that of maintenance for the amount of patching, repairing and renewal of boiler structure is a direct reflection of the stresses and strains set up while in use. We do not see locomotive type boilers in power houses. The water tube and other high evaporative types of boilers are built with a view to greater evaporation. They must do two things; make two steam bubbles grow where one grew before, and thoroughly mix the boiler water so as to reduce the sluggish water areas or temperature ranges to a minimum.

The element lacking in the locomotive type boiler, is proper circulation. If proper circulation is provided it will act in three ways: first, it will induce greater evaporation because water is a non-conductor of heat which must be moved against a hot surface for heat transfer and evaporation; second, if the increased capacity is not usable, the coal rates will be proportionately reduced and thus fuel economy be obtained; third, the circulation of the water in the locomotive boiler will result the same as in a water tube stationary boiler in obtaining a reduction of stresses as well as a corresponding amount of savings in work and expense.

It is desirable to have a boiler capacity of 100 per cent of the total cylinder capacity in horse power, for the reason that the fuel, condition and personnel features of boiler operation are not always 100 per cent. By making use of proper water circulation, many locomotive boilers now in operation are designed with 80 per cent to 85 per cent of the total cylinder capacity, leaving the balance to be supplied by means of improved circulation, thereby effecting a saving in total weight of from 10,000 lb. to 15,000 lb.

One of the features of locomotives that use fuel oil is the fact that complete combustion is attained with no spark losses. The principal boiler loss in operation with coal fuel is the unburnt portion of the coal fired. It is estimated that there is a loss from this source as high as 48.5 per cent for coal rates of 185 lb. coal per sq. ft. of grate per hour and from 10 per cent to 25 per cent for 100-lb. to 120-lb. rates. This being the case, coal rates of 75 lb. to 90 lb. should not be greatly exceeded, which points to the necessity of having ample grate surface in order to give a basis for ample firebox volume. This may be reinforced with combustion chambers so as to shorten the flue and thus reduce the weight, as well as to compensate for loss in efficiency due to the change in design. Combustion chambers without adequate water circulation are apt to be a sore spot in maintenance. Special means of induced circulation around combustion chambers have been devised and are now in the process of development.

Fuel Economy at S. P. Power Plants

THE Southern Pacific has for many years made strenuous efforts to reduce its fuel consumption in train service with the result that it is in the first rank among railroads of this country with respect to its fuel record. In the latter part of 1923 attention was also called to the possibility of savings in fuel at stationary boiler plants with the result that a fuel committee was formed on the Texas Lines, consisting of the superintendent of motive power, the chief engineer and the engineer of fuel and water service. A competent assistant engineer was employed and a systematic plan devised for the thorough and periodical inspection of all boiler plants; with recommendations for changes in installations, which were studied and passed on by the fuel committee at monthly meetings, and the systematic instruction of boiler plant employees in the operation of the plants.

On the Texas and Louisiana Lines of the Southern Pacific there are 94 stationary boiler plants of various sizes and uses, varying from large plants at shops and terminals to small plants at water and oil stations, etc. All of these plants burn crude oil as fuel and the total cost of the oil consumed in 1923 was over \$600,000. The character of these plants was such as is common on most railroads and they were maintained in a fair condition, probably comparable to the average throughout the United States.

The passenger locomotive terminal at Houston, known as H. & T. C. roundhouse, is located close to the general office and was one of the first plants to receive attention. During the first half of 1924, improvements in this plant were made at a total cost of \$2,683. The results indicate that the savings in fuel oil accruing from these minor improvements and from closer attention to economical operation will be at least \$15,000 a year or approximately 38 per cent of the fuel cost for 1923. Improvements have been made at many other boiler plants with corresponding results and the work is still in progress.

How the H. & T. C. Power Plant Was Improved

The H. & T. C. power plant, before recent improvements were made, consisted of one 120-hp. Heine water-tube boiler and two 160-hp. Erie City horizontal water-tube boilers, all set singly, their uptakes being connected into a breeching leading to one brick stack 100 ft. high. These boilers supplied steam to operate two 12-in. by 8½-in. by 12-in. duplex Union Steam Pump Company's pumps, used for washing and filling engines, two 12-in. by 10-in. by 12-in. duplex Worthington water pumps for pumping water from sump to stand pipe, one Knowles 14-in. by 7½-in. by 12-in. Underwriter's fire pump, two 7½-in. by 5-in. by 6-in. duplex Worthington boiler feed pumps, one 500-cu. ft. duplex steam-driven air compressor, one 18-in. by 24-in. simple steam engine for driving machine shop tools and five oil pumps. There was in addition, one 2,200-cu. ft. Chicago Pneumatic air compressor driven by a synchronous motor.

During the summer, after a majority of the improvements had been completed and the fuel consumption had been reduced about 40 per cent, it was found that the load could be carried by one boiler. One boiler supplied all steam necessary until the sleet storm on December 19. This operation of one boiler resulted in further fuel savings by firing one boiler at full load in place of two boilers at less than rating and by eliminating large radiation losses from the second boiler. It also provided a large margin of reserve by having two boilers out of three ready for service or available in case repairs were necessary.

The following is an itemized statement of the improvements made and the cost of each:

Installation of 2-in. line to waste-reclaiming plant to use exhaust in place of live steam.....	\$90
Connections from hot water washing and filling tank to boiler feed pumps.....	150
Installation of 6 Hammel oil burners and air chamber on oil line to reduce steam for atomization and improve combustion.....	340
Hose, boiler tube cleaner and Navy boiler compound.....	140
Use of hollow staybolt steel plugs and plastic cement to prevent entrance of cold air to furnace.....	50
Installation of oil meters.....	100
Removal of 250 ft. of dead-end steam pipes.....	25
Insulation of steam pipes in boiler room.....	150
Insulation of ends of boiler drums.....	150
Installation of lubricated blow-off valves to prevent leaks and reduce repairs and maintenance of previous valves.....	45
Connections to utilize exhaust in place of live steam to heat oil for burners.....	20
Installation of steam traps to prevent waste of steam.....	110
Installation of 400-hp. feedwater heater.....	1,238
Repairs to dampers to make them adjustable.....	25
Installation of steam soot blowers to facilitate effective removal of soot from tubes.....	50

\$2,683

Comparative Requirements for Steam

The requirements for steam during 1923 and 1924 were approximately the same. The same principal equipment was in service such as compressors, engines, water and oil pumps. During 1924, there was put into operation a hot water washing and filling system which replaced one small pump using cold water with two larger pumps for handling hot water. There was also installed an auxiliary oil tank for the power plant with two small oil pumps for pumping oil direct to the burners. The oil pump which formerly pumped oil to the burners through about 800 ft. of two-inch line at a pressure of 240 lb. per sq. in. now pumps oil through a three-inch line to the auxiliary tank.

In view of the fact that the H. & T. C. handles only passenger engines and that all demands upon the power plant vary with the engines handled, the number of engines washed each month represents the most accurate index of output of the plant. This demand upon the plant consists of steam for firing up engines, power in the machine shop, air and oil and water supply. The demand increases in winter due to the necessity for heating a few buildings and for heating oil. The following is a record of all engines which were washed or had their water changed, this being the only official and accurate record available. This work necessitates washing, filling, pumping and heating oil, pumping water and a due percentage of other mechanical operations.

ENGINES WASHED OR HAVING WATER CHANGED AT H. & T. C. TERMINAL

Month	1924	1923
January	554	462
February	550	435
March	587	486
April	553	492
May	572	527
June	594	527
July	663	570
August	605	566
September	499	545
October	486	569
November	451	560
December	542	561
Totals.....	6,656	6,300

QUANTITY OF FUEL BY MONTHS—1924 PRICE PER GALLON

Month	Gal. of oil 1924	Gal. of oil 1923	Average price per gal. 1924
January	112,500	88,827	\$0.03545
February	92,816	73,640	0.03496
March	90,903	100,948	0.03467
April	83,511	101,800	0.03451
May	78,294	93,425	0.03352
June	65,685	88,177	0.03418
July	62,698	95,391	0.03401
August	59,567	107,820	0.03439
September	59,480	97,633	0.03398
October	63,312	91,710	0.03276
November	56,367	107,610	0.03231
December	77,474	112,963	.....
Totals.....	902,607	1,159,944	\$0.37474
Average.....			\$0.03407

The quantities for 1924 were accurately measured by oil meters. Those for 1923 were calculated by measurement of oil in sumps and other methods of estimating and are not as accurate as the 1924 figures. An endeavor was made, however, with the means at hand, to obtain a close approximation of the actual quantity of oil used in 1923 and the figures are undoubtedly nearly correct.

In order to determine the savings made at this plant, three methods may be used. First, the difference in the total oil burned in the two years, 257,337 gal. at the average price of oil, \$0.034 per gal., represents \$8,749 a year. This might be called the actual savings, as the improvements were made during the course of the year and full benefit was not received until last summer.

A second method would be to compare the last six

months of each year. This more nearly reflects the rate of savings, as most of the important improvements were completed during the first half of 1924. This difference is 613,127—378,898, or 234,229 gal., which at \$0.034 a gal. equals \$7,964 in the six months. This is equivalent to \$1,327 a month or \$15,924 a year.

A third method would be to base the savings on the fuel record for December of the two years, as in each case it was obtained from an oil meter and is accurate. December, 1924, included several unusual days of ice and sleet and might not indicate the full savings. On this basis the reduction in fuel is 35,489 gal. which at \$0.034 a gal. is equal to \$1,206 a month or \$14,472 a year. These improvements were made under the direction of H. M. Lull, chief engineer, Southern Pacific, Texas Lines.

Hearing on Gooding Bill

WASHINGTON, D. C.

THE old controversy over the relations between water-competitive rates and rates to intermediate points is again being threshed over before the House committee on interstate and foreign commerce, which on January 20 began hearings on the Gooding bill, which was passed by the Senate on May 19, 1924. The bill proposes to amend section 4 of the interstate commerce act in such a way as to take away the discretion now allowed the Interstate Commerce Commission to permit the railroads to meet water competition without making corresponding reductions in intermediate rates. The committee had announced that three days of morning sessions would be allowed for testimony on behalf of the proponents of the bill and three for testimony opposed to the bill, but so many witnesses asked for time that after the first session had been taken up with the testimony of one witness, and questions by members of the committee, it was decided to allow four days for each side.

A large number of representatives of the intermountain country were on hand to urge the passage of the bill. After Chairman Winslow of the committee had stated that they had asked for more time than the committee had available, Alfred P. Thom, general counsel of the Association of Railway Executives, indicated the large number of witnesses opposed to the bill who had already indicated a desire for time when their hearing begins on January 27. He said the general presentation would be made by Charles Donnelly, president of the Northern Pacific, and that representatives of the Great Northern, Chicago, Milwaukee & St. Paul and Atchison, Topeka & Santa Fe would undoubtedly desire to reply to statements regarding their attitude made by the first witness, W. S. McCarthy, of Salt Lake City, president of the Intermediate Rate Association. Also representatives of the Pacific Coast cities and commercial organizations had asked for six hours, which would consume three days' sessions, and there would also be representatives of New England, New Orleans, the Southeast and the Mississippi Valley. He pointed out that the bill involves a nation-wide economic question and that if the committee desires to understand it fully, it should consider the testimony regarding the effect on various sections of the country. Representative Rayburn said that at this late day in the session to extend the time would be of no use "unless this hearing is to be just horse-play" and that it might as well be broken up; and Representative French, of Idaho, who had introduced the witnesses in favor of the bill, said they would prefer to condense their statements so the hearing could be concluded and not endanger the passage of the bill by con-

suming further time, but the committee held a short executive session and decided upon the extension.

Mr. McCarthy and other witnesses for the Intermediate Rate Association laid particular emphasis on their desire to be relieved of the constant necessity of defending themselves against the applications of the railroads, saying that since 1918 there have been no violations of the fourth section on westbound transcontinental rates and that they wanted that status preserved. For 35 years, Mr. McCarthy said, "the interior west has struggled against the handicap of freight rate discrimination and the story of its failure to develop more rapidly in industry, manufacture and population can be written in and is entirely attributable to freight rate discrimination." He also said that for seven years "the provisions of this bill have been practically in effect, "yet the transcontinental railroads have not been wrecked," but that the commission cannot protect the intermountain interests for more than two years at a time, because at the expiration of that time the railroads can file new applications. He insisted that the railroads are trying to destroy Panama Canal competition absolutely, but that if they had the entire traffic of the canal it would add but 2½ per cent to their entire traffic. He repeated the usual arguments of the intermountain section against the principle of allowing railroads to meet water competition without making equally as low rates to the intermediate points, but he devoted much of his time to what he termed the misrepresentations made regarding the bill by Chicago and other middle western organizations. These, he said, have given their support to the railroads in this matter "for a price" because of their desire to have an advantage over New York and other eastern cities. He said they had endeavored to make it appear that the bill would absolutely prohibit the commission from allowing any fourth section relief, whereas it exempts circuitous rail routes, export and import rates and express rates, and he denied that the intermountain shippers are asking for rates lower than those to the Pacific Coast. Mr. McCarthy also read letters written some time ago by various western railroad traffic officers expressing the opinion that the railroads might pay more attention to developing the intermountain country and less to the coast traffic. When Representative Newton showed that some of the same traffic officers had testified before the Senate committee against the Gooding bill, Mr. McCarthy said that the letters expressed their "personal" views. He said that the Chicago Association of Commerce, in a bulletin to its members, had given "inside information" that the applications of the transcontinental roads now pending be-

fore the commission for relief on 47 commodities was merely the entering wedge, and that if they should be granted other applications would follow.

In reply to Representative Newton, Mr. McCarthy said that he had no criticism to make of the Interstate Commerce Commission, which for seven years, he said, had done everything it could to protect the intermountain country, but that no one will make investments in new enterprises in that territory as long as the possibility exists of a change in the situation at any time.

J. A. Ford, of Spokane, Wash., secretary of the Intermediate Rate Association, said that the bill is not an absolute fourth section bill, but simply prohibits fourth section departures to meet water competition and that it does not prevent meeting water competition, but simply says that the railroads shall not do so at the expense of the intermediate points. There is no question, he said, but that questions of rate-making should be left to the Interstate Commerce Commission, but he took the position that this is not a rate-making bill, but a "policy bill." It would not affect the vast majority of rates, he said; and it would cause no disturbance in rates in the west and very little

in the east. He also said that the application now pending is nothing but an entering wedge and that if the commission should adopt the recommendations made by the examiner in the tentative report and deny the relief asked, there would be nothing to prevent the railroads from filing another application in an effort to "wear out" the opposition. When Representative Hawes asked the witness why he considered that "this committee, with not a single railroad expert on it," or Congress, was better qualified to pass on a question of this kind than the Interstate Commerce Commission, Mr. Ford said that the question involved is one of policy, like the law against rebating, and that the bill was intended to carry out more specifically what Congress has been intending to carry out in its various amendments of the law since 1887.

Frank Lyon, counsel for the Luckenbach steamship company, said that if Congress is to do anything more than lip service to foster water competition, it must take from the commission the power to make the substantive law of the fourth section ineffective, and that it should not give to any body the power to say whether transportation in this country shall be by rail or water.

A Railroad Code of Ethics

AT the regular monthly meeting of the Western Railway Club, held at the Auditorium Hotel, January 19, R. S. Parsons, vice-president of the Erie, discussed the possibility of a railroad code of ethics, prefacing his remarks with the old Dutch proverb, "A cat can look at a king." The following is a brief abstract of Mr. Parsons' paper.

The growth of our railroads has been such that we have bragged about it for many years. Its projectors have been called empire builders. Their footprints are still deeply implanted, particularly in the western part of our country. But unlike a medical genius, they have not been able to bury their mistakes, and their mistakes have been largely moral ones.

In the far flung activities of a railroad organization, the points of contact might be enumerated roughly as: Investors, shippers, employees, neighbors, competitors and the public at large.

A railroad is unique in that its physical property is all length and no breadth. This brings it in contact with a great many neighbors whose interests and grievances are personal. Again, unlike other industries, a railroad's neighbors are largely its patrons, and neighborhood quarrels affect patronage. Smoke nuisance, personal injuries, livestock damages, all handled from centers remote, have developed resentment which is reflected in utilities commissions, grade crossing laws and other restraining legislation, to say nothing of jury findings. Toward each other we find a lack of co-operation, everything being made subservient to competition, with the result that today the rulings of state and federal commissions control the traffic departments, even in minutia.

Probably the most difficult of all gulfs to bridge is the one between employer and employee. The old theory of master and servant is so strongly ingrained in human nature that only the strongest efforts can bring out a better understanding. However, a tendency to work out these problems is evident. Safety committees insure better protection to the body; welfare activities help educationally, hygienically, socially and in the conduct of homes. This latter activity is being overdone, and it is being demonstrated that the laboring man does not like to be told how he should conduct his home, take his

pleasures or enter other activities outside of working hours.

Participation in management and a share in ownership is the longest step taken. Stability of employment and development of permanent working organizations are major requirements for industrial peace. The committee appointed recently by the American railway executives to wipe out seasonal employment will go a long way toward simplifying the problem.

So vitally interested in the railroads has the public become that the railroads have become equally interested in the public.

With the properties holding the middle ring in the political arena, the necessity for public sympathy is apparent. From office doors for years closed to the reporter, now issues exhaustive news matter in printed form ready for the compositor. Close-mouthed executives throng the dinner clubs for a chance to give expression.

Programs are formulated and checked frequently and capital expenditures are exploited. And so intent is the endeavor to keep the public informed and educated that Senate investigations are launched lest propaganda be intended. "The Devil was sick—The Devil a monk was he. The Devil is well—the devil a monk is he."

What of the future? If the legally imposed restrictions are removed and the governmental aids to good behavior are abolished, is there moral stamina sufficient within the railroad bodies to continue the growth of virtue which oppression has stimulated?

Codes of ethics are as old as craft organization. Originally intended to develop and make skilled artisans, their scope is now extended to include various other craft objectives, such as higher ethical standards.

Code of Ethics Governing Railroads

It is not the purpose of the writer to draw up a railroad code of ethics, but merely to call attention to the need of such an instrument and to provoke discussion as to the possibility of its development. This paper would not be complete, however, without at least an attempt at a suggestion.

Relation of Railroad to Investor. Simple reports readily understandable. Personal financial disinterest.

Honest maintenance and operation. Elimination of all methods conducive to stock manipulation.

• *Shipper.* Impartiality. Courtesy. Sympathy in special problems. Contact. Service in its broadest sense.

Employee. Absolute recognition of merit over favoritism. An opportunity to rear a family on true American principles and work out an educational, social and moral program of advancement culminating in a safe and honorable old age.

Relief from the burden of unionism and its leveling effect, this to be accomplished by taking over all of the advantages and eliminating the disadvantages.

Subordination of self to principle in all official life.

Neighbor. Contact. Mutual esteem. Willingness to work out common problems. Less law and more love.

Competitors. Elimination of all methods of solicitation except service. Co-ordination of facilities when conditions require. Conscientious observance of contracts. Avoidance of slander.

Public. Truthful publicity of all matters of public interest. Ready explanation of failure to perform. Explicit carrying out of promises, and no promises made incapable of performance. Service of the highest type performed cheerfully and courteously. An example to all industry of a high type of American institution.

Some may say why not adopt the Golden Rule and be done with it. To this we reply that the Golden Rule is a basic principle which supplies the motives for all codes, and if it can be amplified to render a specific answer to each question, we will gladly vote for it.

Annual Meeting of the A. S. C. E.

THE annual meeting of the American Society of Civil Engineers was held at New York on January 21 to 23. A number of committee reports of interest to railway men were presented either in final form or as progress reports. These included stresses in track, stresses in structural steel, standard construction contracts, concrete and reinforced concrete arches, electrification of steam railways, etc.

Honorary membership was conferred on Herbert Hoover, Secretary of the Department of Commerce. The following officers were elected for the ensuing year: President, Robert Ridgway, chief engineer, Transit Commission of State of New York; vice-presidents, R. L. Humphrey, consulting engineer, Philadelphia, Pa., and M. S. Ketchum, dean of the College of Engineering, University of Illinois, Urbana, Ill.; directors, District 1, W. T. Chevalier, New York, and Charles Gilman, vice-president, Massey Concrete Products Corporation, New York; District 2, C. M. Spofford, Boston, Mass.; District 6, A. R. Raymer, chief engineer, Pittsburgh & Lake Erie, Pittsburgh, Pa.; District 10, P. H. Norcross, Atlanta, Ga.; and District 13, H. D. Dewell, San Francisco, Cal.

Increased working stresses were recommended in the report on stresses in structural steel, which are summarized in the table. These increased working stresses may safely be used in the design of steel framework for buildings provided certain conditions are met in the execution of the work as follows:

(1) That the material fulfills the requirements of the A. S. T. M. specification for structural steel for buildings, that the material has been properly identified by test, and that it has been determined that material of any heat, regardless of form of section or thickness of material, meets the minimum requirements of the specification.

(2) That the design is made by one competent to judge intelligently and correctly the loads to be carried and the service to be performed, to determine the resultant stresses, and to proportion the parts so that they will meet the conditions of well-recognized specifications governing the proportioning of parts and the fabrication and field erection of the structure.

(3) That the design is based on the actual dead loads and on the maximum live loads, increased by impact factors, consistent with the service of the structure (no future unknown change of service or loading is provided for in the units recommended); that the separate and combined stresses are correctly calculated; that the designing and detailing are properly done; and that unusual service conditions are separately taken into account by the engineer making the design.

(4) That first-class workmanship both in shop fabrication and in field erection is obtained, and that the engineer is in a position to assure himself that his design is satisfactorily carried to completion.

The report of the committee on stresses in track was not completed in time for printing but was summarized briefly by the chairman of the committee, A. N. Talbot, professor of municipal and sanitary engineering, University of Illinois, Urbana, Ill. The results of the committee's work showed that the effect of speed on electric locomotives between 5 miles an hour and 60 miles an hour gave an increase in stress of about 12 per cent. With a Mikado steam locomotive increasing from 5 miles an hour

to 40, the increase in stress was 46 per cent, 35 per cent of this being the effect of the counter-balance. On loaded cars the increase was 14 per cent. The tests also showed that the frequently stated rule in regard to sprung and unsprung weight did not apply, no marked difference

RECOMMENDED UNIT WORKING STRESSES.* FOR EQUIVALENT STATIC STRESS IN STRUCTURAL-STEEL FRAMEWORK OF BUILDINGS AND SIMILAR STRUCTURES; TO BE APPLIED TO THE SUM OF STRESSES FOR LOAD AND IMPACT ADDITION; FOR STRENGTH MARGIN OF 50 PER CENT

Kind of stress.	Permissible unit stress, in pounds per square inch.
Tension, net section.....	20,000
Compression, net section.....	20,000
Compression, axial, for columns with square ends or equivalent (with maximum of 16,000 up to $\frac{l}{r} = 50$)....	$16,000 - 80 \frac{l}{r}$ (E is excess of over 50)
Bending stress in extreme fibres of rolled shapes and built sections applied to net moment of inertia:	
When compression flange is continuously supported laterally.....	20,000
When compression flange is not continuously supported laterally (with a maximum of 18,000 up to $\frac{l}{b} = 10$).....	$20,000 - 200 \frac{l}{b}$ (l = unsupported length and b = width of flange)
Web shear, average on net section.....	15,000
Shear on power-driven rivets (including those driven with power operated hand hammer), pins, and finished bolts with driving fit.....	15,000
Shear on hand-driven rivets and unfinished bolts.....	10,000
Bearing on power-driven rivets, pins, and finished bolts with driving fit:	
In single shear.....	*
In double shear.....	27,000
Bearing on hand-driven rivets and unfinished bolts:	
In single shear.....	30,000
In double shear.....	18,000
In applying these stresses, proper attention must be given to web buckling and to deflection.	20,000

being found. The test between electric locomotives coasting, motoring and regenerating also showed no marked difference. The tests on the eastern roads to find the effect of canting produced some interesting results. It was found that with canted rail the wheel bearing came very nearly over the center of the rail and with flat tie plates the bearing was on the inner part of the head. The wear on the canted rail was much more even than on the straight rail. In regard to lateral bending stresses which often amount to a considerable figure, these stresses averaged very small with canted rail while they were considerable with flat plates. The objection of narrowing of gage was found to be due to the eccentricity of the plates and occurred in both canted and flat.

General News Department

Shop employees of the Delaware, Lackawanna & Western have finally called off the strike which has been effective since July 1, 1922. The Lackawanna has issued a statement that the men will not be given their old jobs back but will have to apply for work as new men.

Heavy rains in the vicinity of Macon, Ga., early in the week were reported to have impeded operations of the railways serving the territory affected. No serious washouts were reported but delays were caused by fear of soft places in the track which in many places was inundated.

The Interstate Commerce Commission by an order dated January 12 has changed the date of fulfillment of its train control order as to the Delaware, Lackawanna & Western from January 1 to July 1, and has also specified the territory as between Elmira, N. Y., and East Buffalo, instead of between Hoboken and Buffalo.

William G. McAdoo, formerly director general of railroads under the United States Railroad Administration, has been appointed a member of the mediation commission which will attempt to settle the dispute between the city of Los Angeles, Cal., and the railways entering that city with reference to the municipality's demand for a union passenger station.

Fire on the evening of January 17 in the old Fitchburg station of the Boston & Maine, Boston, Mass., now used as an office building, burned out the top floor, causing considerable damage to the quarters used by the auditor of the freight accounts principally for the storage of records. Loss estimated at \$50,000 to \$100,000.

Employees of the Illinois Central and members of their families to the number of 3,500 from all points on the system, but principally from the general offices and the divisions adjacent to Chicago, attended a special performance at the Auditorium theatre, Chicago, given by the Chicago Civic Opera Company on Sunday evening, January 18. The entire house was reserved by the railway and the audience was confined to employees and their guests. The opera presented was "Aida."

Washington-Baltimore Bus Service Permit Refused

The Maryland Public Service Commission has refused to permit the introduction of automobile bus service between Baltimore and Washington. It holds that service additional to that already supplied by the Pennsylvania, the Baltimore & Ohio and the Washington, Baltimore & Annapolis is not necessary, and that the highway is now taxed to accommodate its present traffic.

Howell-Barkley Bill Again Passed By

Another day on which the Howell-Barkley railroad labor bill might have been considered in the House of Representatives was again allowed to pass by on January 19 without any effort being made by the advocates of the bill to have it taken up. The bill is on a House calendar that comes up only every other Monday but so far at this session of Congress no effort has been made to have the bill considered. The Senate committee, having reported the bill with an amendment, is giving it no further attention, although some of the advocates of the bill say they are still hoping to have the amendment put in a more desirable form.

Status of Automatic Train Control Orders

In addition to the railroads that have been allowed by the Interstate Commerce Commission an extension of time in which to complete their installation of automatic train control on a division as required by the commission's order of June 13, 1922, there are several roads that have not filed any petition for an extension of

time, or whose petitions, if filed, have not yet been acted upon by the commission. Most of the roads have been granted extensions and four have been denied, but in addition the installations on the Atchison, Topeka & Santa Fe; Chesapeake & Ohio; Chicago & Eastern Illinois; Chicago, Rock Island & Pacific; Philadelphia & Reading, and Southern Pacific are regarded as completed, or practically so. The Atlantic Coast Line has filed a petition for an extension on which the commission has not yet announced its decision, and it is understood that the Chicago, Milwaukee & St. Paul; Long Island, Pennsylvania, and West Jersey & Seashore have not yet filed petitions for an extension.

General Foremen's Association

The International Railway General Foremen's Association has appointed committees to report on the following topics at the annual convention in Chicago next September.

Automatic Train Control—Charles C. Kirkhuff, Atchison, Topeka & Santa Fe, Chicago, chairman.

Supervision and Repairs of Special Appliances, Boosters, Reverse Gears, Feedwater Heaters, etc.—J. H. Armstrong, Atchison, Topeka & Santa Fe, Topeka, Kans., chairman.

Straight Line or Spot System of Car Repairs—G. P. Hoffman, Baltimore & Ohio, Baltimore, Md., chairman.

What Can the General Foreman Contribute to Obtain More Ton-Miles Per Shop Man-Hour?—F. B. Harmon, Atchison, Topeka & Santa Fe, San Bernardino, Cal., chairman.

Reclamation of Material, Car and Locomotive—A. J. Larick, Baltimore & Ohio, Chillicothe, Ohio, chairman.

Best Routing System to Increase Shop Output—Wallace Murray, Chicago, Rock Island & Pacific, Silvis, Ill., chairman.

Additional information may be obtained from the secretary-treasurer of the association, William Hall, Winona, Minn.

New York Central to Give Lectures on Railroading

Following a request from members of the New York Central Athletic Association at Rochester, N. Y., the New York Central has arranged for a course of lectures to be given on the science of railroading. The lectures will be in the nature of university extension courses and members will be invited to prepare papers on the subjects treated in each lecture for which prizes will be awarded. The lectures will be given on the last Thursday of each month.

On January 29 T. W. Evans, assistant vice-president of operation, will lecture on the part played by the railroads in the economic life of the nation. On February 26 F. E. Williamson, general superintendent of the New York terminal district, will speak on transportation and supervision. On March 26 W. C. Wishart, controller, will speak on railroad financing and accounting. On April 30 G. W. Kittredge, chief engineer, will speak on the principles of railroad location and construction. The course will include lectures on locomotive and car design by F. H. Hardin, chief engineer of motive power and rolling stock; the maintenance of locomotives and cars by R. M. Brown, assistant superintendent of motive power; and on the maintenance of tracks, bridges and buildings, by J. V. Neubert, engineer maintenance of way. In addition, the faculty of Rochester University will participate.

Freight Cars and Locomotives on Order

In anticipation of a heavy freight traffic during the year, Class I railroads had over 30,000 more freight cars on order on January 1 this year than they did on the same date last year, according to reports filed by the carriers with the Car Service Division of the American Railway Association. On January 1, 1925, freight cars on order, deliveries of which were being made daily by car builders, totaled 55,684, as compared with 25,619 on January 1, 1924. Of these box cars totaled 33,636, coal cars 14,997, refrigerator cars 2,888, and stock cars 2,951.

Locomotives on order on January 1, 1925, totaled 287, as compared with 510 one year ago.

During the calendar year 1924, the railroads installed in service 156,414 freight cars, a decrease of 41,461, as compared with the number installed during the preceding year. Of the total number placed in service in 1924, box cars totaled 72,808, coal cars 48,678, refrigerator cars 13,546 and stock cars 9,571. They also installed in service 2,246 locomotives, as compared with 4,037 during the year 1923.

Freight cars now being installed have a larger carrying capacity than those being retired from service. The average capacity of freight cars on January 1, 1925, was 44.32 tons compared with 43.56 tons on January 1, 1924, or an increase of nearly four-fifths of a ton per car.

These figures as to freight cars and locomotives either installed or on order include new, rebuilt and leased equipment.

Additional Information Regarding Railway Budgets

In addition to the information showing the magnitude of the expenditures which the railways will make for additions and improvements to their properties in 1925, published in the *Railway*

Age of January 3, page 27, data have since been received from two other railways, indicating that they will spend more than \$81,000,000. The budget of the Atchison, Topeka & Santa Fe aggregates approximately \$60,000,000, including \$26,000,000 for the completion of work now authorized (included in the January 3 statistics), \$21,000,000 for new work, \$8,000,000 for new equipment and \$5,000,000 for new lines. In the work now authorized and carried over, the largest items include new bridges over the Mississippi and Canadian rivers, a new general office building at Topeka and the completion of automatic train control between Chicago and Fort Madison, Iowa. In the new work is included the construction of 98.9 miles of automatic block signals, the enlargement of yards at Chillicothe, Ill., Shopton, Iowa, Chanute, Wichita, Arkansas City, and Wellington, Kan., Belen, N. M., Bellville Yard, Tex., and Bakersfield, Cal. A total of 159.5 miles of 90-lb. rail and 372.5 miles of 110-lb. rail will be laid. A considerable mileage of new lines will also be built, which may aggregate as much as 158 miles. New equipment will include 1,000 box cars, 500 gondola cars and 500 refrigerator cars.

The Baltimore & Ohio plans to spend \$21,527,000, of which \$14,570,000 will go for equipment and shop tools and \$6,957,300 for roadway and structures.

OPERATING REVENUES AND OPERATING EXPENSES OF CLASS I STEAM ROADS IN THE UNITED STATES

FOR THE MONTH OF NOVEMBER, 1924 AND 1923

Item	United States		Eastern District		Pocahontas Region		Southern Region		Western District	
	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923
Average number of miles operated	235,937.86	235,737.55	59,473.83	59,267.14	5,458.07	5,452.68	38,353.24	38,449.27	132,652.72	132,568.46
Revenues:										
Freight	\$380,874,829	\$395,885,054	\$158,825,001	\$171,997,331	\$17,805,256	\$15,519,700	\$50,814,958	\$50,908,399	\$153,429,614	\$157,459,624
Passenger	a 78,812,385	b 87,126,454	38,091,738	40,558,291	1,821,893	2,068,613	11,153,541	12,073,394	27,745,213	32,426,156
Mail	8,197,008	7,978,500	3,075,255	3,010,950	265,532	187,399	1,163,354	1,121,023	3,692,467	3,659,128
Express	11,878,315	13,115,409	4,876,725	5,709,334	258,512	270,523	1,614,114	1,736,306	5,128,964	5,399,246
All other transportation	15,673,980	16,358,628	8,783,395	9,189,136	164,552	147,864	969,350	983,180	5,756,683	6,038,448
Incidental	9,717,954	10,869,026	5,097,681	5,798,694	326,915	329,145	1,032,274	1,082,650	3,261,084	3,658,537
Joint facility—Cr.	847,849	892,069	364,096	388,249	15,145	15,487	125,130	133,404	343,478	354,929
Joint facility—Dr.	205,825	236,481	102,130	115,346	1,913	1,825	32,696	31,733	69,086	87,577
Ry. operating revenues	505,796,495	531,988,659	219,011,761	236,536,639	20,656,292	18,536,906	66,840,025	68,006,623	199,288,417	208,908,491

Expenses:										
Maintenance of way and structures	65,776,810	68,678,359	27,914,019	29,415,380	2,954,258	2,666,211	9,686,690	10,222,700	25,221,843	26,374,068
Maintenance of equipm't	102,824,142	120,640,068	49,157,705	60,969,995	4,992,102	5,517,169	13,298,905	14,671,954	35,375,430	39,480,950
Traffic	8,429,110	8,320,354	3,069,787	3,146,777	197,549	190,574	1,511,154	1,548,246	3,650,620	3,437,757
Transportation	180,563,499	192,856,779	84,066,210	91,319,119	5,940,554	6,753,864	23,157,127	24,611,371	67,399,608	70,672,425
Miscellaneous operations	3,971,227	4,033,861	1,949,831	1,991,277	81,653	77,819	405,203	392,225	1,534,540	1,572,540
General	13,720,901	13,801,242	6,092,109	6,162,241	441,984	423,949	1,793,257	1,795,678	5,393,551	5,419,374
Transportation for investment—Cr.	1,017,558	1,374,061	103,111	247,819	54,420	55,223	280,477	141,630	579,550	9,929,389
Ry. operating expenses	374,268,131	406,956,602	172,146,550	192,756,970	14,553,680	15,074,363	49,571,859	53,097,544	137,996,042	146,027,725
Net revenue from railway operations	131,528,364	125,032,057	46,865,211	43,779,669	6,102,612	3,462,543	17,266,166	14,909,079	61,292,375	62,880,766
Railway tax accruals	29,883,451	30,221,518	11,277,842	11,023,539	1,143,984	1,174,635	4,324,064	3,934,453	13,137,561	14,088,891
Uncollectible ry. revenues	146,869	148,172	61,852	87,207	5,143	3,347	21,586	21,983	58,288	35,635
Ry. operating income	101,498,044	94,662,367	35,525,517	32,668,923	4,953,485	2,284,561	12,922,516	10,952,643	48,096,526	48,796,240
Equipm't rents—Dr. bal.	6,626,572	6,369,893	2,214,843	2,892,885	d 430,963	d 403,974	386,867	450,765	3,855,825	3,430,217
Joint facility rent—Dr. bal.	1,691,827	1,516,495	782,953	739,464	88,087	103,328	175,590	59,622	645,197	614,081
Net ry. operating income	93,179,645	86,775,979	31,927,721	29,036,574	5,296,361	2,585,207	12,360,059	10,442,256	43,595,504	44,711,942
Ratio of expenses to revenues (per cent).....	74.00	76.50	78.60	81.49	70.46	81.32	74.16	78.08	69.24	69.90

For ELEVEN MONTHS ENDED WITH NOVEMBER, 1924 AND 1923										
Average number of miles operated	236,165.58	235,972.65	59,482.26	59,323.86	4,599.11	5,449.23	38,355.27	38,444.08	132,868.94	132,755.48
Revenues:										
Freight	\$3,985,548,354	4,281,391,702	1,755,062,613	1,990,564,507	179,709,269	175,608,098	530,566,669	546,723,676	1,520,209,803	1,568,495,421
Passenger	a 985,776,179	b 1,046,459,215	481,464,685	501,721,774	22,591,342	24,585,354	133,823,567	141,189,068	347,890,585	378,963,019
Mail	88,009,100	83,637,325	33,584,289	30,968,091	2,234,583	1,998,720	12,477,869	11,960,801	39,712,359	38,709,713
Express	128,645,798	139,725,282	56,114,497	63,850,365	2,906,876	3,149,346	17,291,759	17,624,455	52,332,666	55,101,116
All other transportation	176,456,829	184,091,205	101,128,332	107,909,883	2,021,380	1,988,841	10,370,831	10,610,377	62,936,286	63,582,104
Incidental	109,392,828	123,461,810	55,663,781	66,300,064	3,722,657	3,939,736	11,644,349	11,944,064	38,362,041	41,277,952
Joint facility—Cr.	9,492,257	9,247,896	3,977,323	4,219,437	166,284	159,114	1,418,415	1,383,358	3,930,235	3,485,987
Joint facility—Dr.	2,346,175	2,460,144	1,159,158	1,277,414	25,570	35,853	341,548	356,450	819,899	790,427
Ry. operating revenues	5,486,969,170	5,865,554,291	2,485,836,362	2,764,256,707	213,326,821	211,393,350	717,251,911	741,079,349	2,064,554,076	2,148,824,885
Expenses:										
Maintenance of way and structures	742,781,020	760,132,935	305,653,384	324,603,602	31,183,506	26,919,040	103,120,482	105,395,630	302,823,648	303,214,663
Maintenance of equipm't	1,164,020,197	1,360,246,335	554,956,804	682,693,462	53,421,668	55,910,177	146,763,349	161,860,317	408,878,376	459,782,379
Traffic	90,448,279	85,957,878	34,014,188	32,117,595	2,281,540	2,071,766	15,726,279	15,444,908	38,426,272	36,323,518
Transportation	1,990,855,012	2,164,979,351	944,114,902	1,049,979,189	65,036,280	69,463,978	256,154,087	272,114,703	725,549,743	773,421,481
Miscellaneous operations	46,189,508	46,650,144	21,992,816	22,555,822	919,817	907,661	4,466,758	4,260,741	18,810,117	18,925,920
General	154,528,578	149,070,759	68,195,720	66,620,102	4,901,354	4,483,657	20,047,129	19,487,885	61,384,375	58,479,115
Transportation for investment—Cr.	11,931,995	10,056,018	1,604,649	1,365,150	411,985	249,260	1,699,551	1,157,642	8,215,810	7,283,966
Ry. operating expenses	4,176,890,599	4,556,981,384	1,927,323,165	2,177,204,623	157,332,180	159,507,019	544,578,533	577,406,632	1,547,656,721	1,642,863,110
Net revenue from railway operations	1,304,078,571	1,308,572,907	558,513,197	587,052,084	55,994,641	51,886,331	172,673,378	163,672,717	516,897,355	505,961,775
Railway tax accruals	316,823,263	308,327,897	129,081,593	128,747,092	12,878,275	11,425,281	40,339,633	37,761,999	134,523,762	130,393,525
Uncollectible ry. revenues	1,893,759	1,473,778	849,827	688,618	45,245	64,930	187,680	154,522	811,007	565,708
Ry. operating income	985,361,549	998,771,232	428,581,777	457,616,374	43,071,121	40,396,120	132,146,065	125,756,196	381,562,586	375,002,542
Equipment rents—Dr. bal.	67,581,417	65,491,787	39,152,417	40,028,785	d 3,740,59					

Operating Statistics of Large Steam Roads—Selected Items for the Month of November, 1924,

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles		Car-miles		Ton-miles (thousands)			Average number of locomotives on line daily			
			Principal and helper	Light	Loaded (thousands)	Per cent loaded	Gross, Excluding locomotive and tender	Net, Revenue and non-revenue	Serv-ice-able	Un-serv-iceable	Per cent unserv-iceable	Stored	
New England Region:													New
Boston & Albany.....	1924	394	263,364	285,001	33,191	5,162	68.2	267,702	104,722	127	19	13.3	...
	1923	394	287,768	309,421	35,506	5,762	68.8	295,149	120,021	114	30	21.1	...
Boston & Maine.....	1924	2,429	518,171	602,742	66,215	13,154	70.1	671,622	275,377	339	120	26.2	37
	1923	2,455	593,400	655,751	61,291	13,425	69.2	695,688	283,937	338	139	29.1	13
N. Y., New H. & Hart.....	1924	1,953	463,844	493,369	31,960	12,657	70.4	640,141	268,612	314	61	16.3	34
	1923	1,974	515,826	541,924	36,510	12,693	71.1	634,810	267,543	302	75	19.8	7
Great Lakes Region:													Great
Delaware & Hudson.....	1924	888	353,466	476,243	44,856	9,824	66.9	617,296	313,692	248	39	13.4	77
	1923	886	376,146	523,720	50,519	10,433	67.2	665,775	343,957	252	47	15.8	43
Lehigh Valley	1924	993	586,307	684,791	93,795	18,337	68.2	1,044,681	472,568	299	64	17.6	16
	1923	993	625,732	755,318	116,935	19,190	65.6	1,102,468	490,811	287	68	19.2	4
Erie (inc. Chic. & Erie).....	1924	2,325	969,475	1,073,462	110,425	35,362	65.9	2,086,451	915,327	648	103	13.7	123
	1923	2,309	1,075,547	1,214,223	78,165	37,808	66.2	2,245,209	1,010,183	664	128	17.2	91
Michigan Central	1924	1,357	607,822	669,268	79,155	18,812	64.4	1,149,613	533,343	461	72	13.5	102
	1923	1,317	684,470	754,895	86,038	19,281	64.7	1,179,241	562,369	419	111	20.9	19
New York Central.....	1924	1,827	531,373	543,605	20,792	16,908	64.8	907,284	351,124	310	61	16.4	101
	1923	1,827	607,665	616,852	22,735	18,703	67.1	985,231	392,564	328	61	15.6	42
New York Central.....	1924	6,447	2,073,019	2,326,329	178,371	73,325	62.8	4,468,201	1,962,912	1,215	440	26.6	295
	1923	6,469	2,249,958	2,547,266	188,027	78,556	62.5	4,764,841	2,070,603	1,328	358	21.2	322
New York, Chic. & St. L.	1924	1,669	646,308	658,510	5,266	19,569	66.4	1,053,361	411,536	255	64	20.0	49
	1923	1,669	761,966	771,774	3,620	20,669	68.4	1,104,253	454,389	220	66	22.9	9
Pere Marquette	1924	2,205	381,005	390,753	8,468	9,665	66.1	554,203	261,967	195	25	11.3	26
	1923	2,197	435,396	455,312	8,609	10,723	68.3	587,705	283,101	197	25	11.3	8
Pitts. & Lake Erie.....	1924	231	117,829	120,749	1,138	4,112	62.0	317,315	185,306	68	18	21.1	15
	1923	231	135,195	143,680	1,262	4,824	61.6	367,222	214,136	72	16	17.8	14
Wabash	1924	2,460	640,629	671,865	11,063	20,961	70.9	1,078,410	456,045	292	60	17.0	29
	1923	2,418	706,455	748,649	13,985	20,071	71.1	1,068,037	444,892	280	49	14.9	...
Central Eastern Region:													Central
Baltimore & Ohio.....	1924	5,207	1,909,711	2,200,617	196,253	53,645	63.2	3,405,118	1,649,253	949	316	25.0	88
	1923	5,212	2,038,819	2,335,229	200,402	55,849	63.6	3,504,780	1,703,024	1,080	202	15.8	129
Central of New Jersey.....	1924	692	270,055	296,579	33,250	6,546	59.9	436,269	205,882	232	44	15.8	37
	1923	694	279,773	308,980	41,175	6,955	62.5	438,172	210,292	231	48	17.3	27
Chicago & Eastern Ill.....	1924	945	239,711	241,701	3,980	6,330	61.9	383,840	180,794	124	32	20.7	39
	1923	945	244,548	245,838	3,949	6,377	62.2	392,201	190,377	123	48	27.5	28
Clev., Cin., Chic. & St. L.	1924	2,386	730,077	778,722	16,728	22,870	60.6	1,499,170	708,686	362	80	18.1	36
	1923	2,377	732,630	770,059	11,397	22,694	63.4	1,442,972	706,986	352	91	20.5	41
Elgin, Joliet & Eastern ¹	1924	460	111,493	120,778	5,515	3,406	65.4	257,891	137,222	80	18	18.2	8
	1923	460	119,669	132,652	7,133	3,653	64.9	275,609	151,196	94	19	17.0	5
Long Island	1924	393	44,991	46,827	8,960	605	59.1	37,393	14,727	44	14	23.6	4
	1923	393	47,019	57,054	9,336	639	60.5	37,982	15,124	41	10	20.0	...
Pennsylvania System	1924	10,942	4,456,593	4,822,593	359,775	124,215	64.2	8,221,260	3,955,809	2,663	849	24.2	153
	1923	10,906	4,826,115	5,213,560	395,221	129,005	65.1	9,473,836	4,176,973	2,966	552	15.7	257
Reading	1924	1,141	657,111	722,378	71,044	16,337	62.5	1,113,338	576,871	414	80	16.2	103
	1923	1,142	643,132	715,385	77,451	16,392	64.3	1,073,149	559,578	320	113	26.1	36
Pocahontas Region:													Poca
Chesapeake & Ohio.....	1924	2,555	1,097,855	1,171,529	41,589	34,040	57.4	2,630,056	1,434,460	474	110	18.9	3
	1923	2,553	991,773	1,080,994	27,339	28,296	58.0	2,205,876	1,186,204	424	106	20.0	11
Norfolk & Western.....	1924	2,230	963,655	1,024,418	35,419	25,762	60.6	2,069,045	1,115,167	571	106	15.6	131
	1923	2,228	840,613	1,032,338	36,727	24,332	61.8	1,835,329	978,060	531	147	21.7	46
Southern Region:													South
Atlantic Coast Line.....	1924	4,867	777,520	791,917	12,650	20,021	64.3	1,055,559	423,860	396	51	11.3	71
	1923	4,861	787,296	794,196	12,433	19,914	65.8	1,014,356	398,730	370	64	14.8	40
Central of Georgia.....	1924	1,907	317,845	319,753	4,485	7,150	75.1	369,487	170,026	135	16	10.7	11
	1923	1,907	391,523	303,797	5,672	6,535	73.3	334,756	151,513	126	17	11.7	...
I. C. (inc. Y. & M. V.).....	1924	6,198	1,741,236	1,764,985	36,648	51,246	65.7	3,095,538	1,369,943	771	111	12.6	30
	1923	6,190	1,937,892	1,954,988	42,567	51,830	60.9	3,318,310	1,464,457	761	127	14.3	...
Louisville & Nashville.....	1924	5,026	1,797,036	1,921,286	69,539	34,685	60.4	2,342,549	1,134,590	624	92	12.9	8
	1923	5,632	1,743,172	1,849,613	67,990	31,737	62.6	2,055,576	995,904	615	86	12.3	...
Seaboard Air Line.....	1924	3,547	535,518	554,752	10,354	13,372	67.8	731,617	300,438	221	38	14.7	...
	1923	3,553	533,499	546,398	8,241	12,653	70.7	656,778	270,449	224	44	16.3	...
Southern Ry.	1924	6,840	1,475,402	1,508,445	33,764	34,734	67.3	1,886,393	771,761	857	119	12.2	23
	1923	6,942	1,527,906	1,569,669	34,622	34,923	69.6	1,819,561	785,435	813	134	14.2	4
Northwestern Region:													North
Chic. & North Western.....	1924	8,463	1,508,095	1,555,261	30,210	34,353	60.7	2,033,178	843,623	789	270	25.5	98
	1923	8,463	1,634,182	1,701,858	18,972	37,113	62.9	2,168,637	924,166	871	197	18.5	57
Chic., Milw. & St. P.	1924	10,983	1,599,676	1,679,990	78,583	44,976	65.9	2,564,264	1,147,491	970	161	14.2	84
	1923	10,991	1,747,177	1,800,343	71,520	45,526	66.1	2,572,944	1,157,136	950	175	15.6	91
Chic., St. P., Minn. & Om.	1924	1,726	321,646	346,229	14,716	6,398	70.0	343,524	147,319	159	38	19.2	

Compared with November, 1923, for Roads with Annual Operating Revenues Above \$25,000,000

Region, road and year	Average number of freight cars on line daily					Gross tons per train, excluding locomotive and tender	Net tons per train	Net tons per loaded car	Net ton-miles per car-day	Car miles per car-day	Net ton-miles per mile per day	Pounds of coal per 1,000 gross ton-miles including locomotive and tender	Locomotive miles per road and tender	
	Home	Foreign	Total	Per cent un-serviceable	Stated									
New England Region:														
Boston & Albany.....	1924	2,240	5,565	7,805	2.9	....	1,016	398	20.3	447	32.3	8,861	199	72.6
	1923	1,869	6,935	8,804	3.2	....	1,026	417	20.8	454	31.7	10,156	198	79.7
Boston & Maine.....	1924	12,840	17,723	30,563	9.9	....	1,296	531	20.9	300	20.5	3,779	145	48.6
	1923	13,474	19,709	33,183	11.4	....	1,172	478	21.1	285	19.5	3,855	165	50.2
N. Y., New H. & Hart.....	1924	18,724	20,456	39,180	20.9	597	1,380	579	21.2	229	15.3	4,584	144	46.7
	1923	18,987	19,243	38,230	19.2	....	1,231	519	21.1	233	15.6	4,517	169	51.2
Great Lakes Region:														
Delaware & Hudson.....	1924	8,771	6,322	15,093	7.0	....	1,746	887	31.9	693	32.4	11,776	178	60.5
	1923	8,670	7,075	15,745	5.1	....	1,770	914	33.0	728	32.9	12,935	205	64.0
Del., Lack. & Western.....	1924	16,037	10,140	26,177	3.7	....	1,782	806	25.8	602	34.2	15,871	170	71.4
	1923	13,701	12,761	26,462	3.5	....	1,752	784	25.6	618	36.8	16,475	182	82.0
Erie (inc. Chic. & Erie).....	1924	33,984	22,303	56,287	6.1	7,538	2,152	944	25.9	542	31.8	13,124	136	52.5
	1923	24,148	24,218	48,366	6.9	....	2,088	939	26.7	696	39.3	14,581	139	53.7
Lehigh Valley.....	1924	21,446	11,554	33,000	7.0	....	1,891	877	28.4	539	29.5	13,106	151	46.8
	1923	20,158	13,997	34,155	5.0	100	1,723	822	29.2	549	29.1	14,235	176	52.9
Michigan Central.....	1924	12,367	15,535	27,902	5.4	395	1,707	661	20.8	412	30.6	6,408	129	50.8
	1923	9,748	19,951	29,699	5.0	15	1,621	646	21.0	441	31.3	7,164	138	54.9
New York Central.....	1924	62,632	69,669	132,301	4.0	14,023	2,155	947	26.8	495	29.4	10,149	128	50.4
	1923	51,919	88,829	140,748	6.9	2,279	2,118	920	26.4	490	29.8	10,670	129	54.1
New York, Chic. & St. L.	1924	9,043	12,196	21,239	5.4	923	1,630	637	21.0	646	46.2	8,221	130	69.5
	1923	7,662	12,662	20,324	6.6	....	1,449	596	22.0	745	49.5	9,072	147	90.5
Pere Marquette.....	1924	8,475	12,154	20,629	6.5	334	1,455	688	27.1	423	23.6	3,961	130	60.7
	1923	6,912	14,627	21,539	3.4	....	1,350	650	26.4	438	24.3	4,295	149	69.8
Pitts. & Lake Erie.....	1924	12,540	7,945	20,485	4.6	1,223	2,693	1,573	45.1	302	10.8	26,687	77	47.0
	1923	7,876	11,745	19,621	3.1	398	2,716	1,584	44.4	364	13.3	30,872	83	54.9
Wabash.....	1924	11,898	11,063	22,061	2.9	625	1,683	712	22.7	662	41.1	6,180	143	64.7
	1923	9,267	15,162	24,429	2.1	....	1,512	630	22.2	607	38.5	6,134	159	77.3
Central Eastern Region:														
Baltimore & Ohio.....	1924	67,845	40,779	108,624	12.4	2,092	1,783	864	30.7	506	26.1	10,558	177	63.2
	1923	57,537	46,978	104,515	5.1	....	1,719	835	30.5	543	28.0	10,892	190	65.9
Central of New Jersey.....	1924	16,792	10,965	27,757	3.7	2,409	1,615	762	31.5	247	13.1	9,917	194	40.0
	1923	13,651	12,814	26,456	8.0	686	1,566	752	30.2	265	14.0	10,095	196	41.8
Chicago & Eastern Ill.	1924	14,166	4,749	18,915	20.8	1,951	1,601	754	28.6	317	17.9	6,376	155	52.5
	1923	12,400	5,083	17,483	14.7	2,913	1,604	778	29.9	362	19.5	6,714	185	48.2
Clev., Cin., Chic. & St. L.	1924	12,405	22,477	34,882	4.8	1,883	2,053	971	31.0	677	36.1	9,900	131	60.0
	1923	11,380	23,099	34,479	9.7	1,917	1,970	965	31.2	683	34.6	9,916	131	58.8
Elgin, Joliet & Eastern ¹	1924	9,777	6,423	16,200	9.7	1,077	2,313	1,231	40.3	282	10.7	9,948	145	43.0
	1923	8,609	7,721	16,330	6.1	....	2,328	1,263	41.4	309	11.5	10,963	140	41.2
Long Island.....	1924	1,749	5,101	6,850	1.0	175	831	327	24.3	72	5.0	1,248	284	32.6
	1923	1,257	6,423	7,680	1.0	....	808	322	23.7	66	4.6	1,282	345	43.0
Pennsylvania System.....	1924	198,708	96,253	294,961	10.0	24,602	1,845	888	31.8	447	21.9	12,051	145	49.2
	1923	174,437	113,242	287,679	5.4	18,188	1,756	865	32.4	484	23.0	12,767	156	53.1
Reading.....	1924	23,204	16,678	39,882	2.0	4,177	1,694	878	35.3	482	21.8	16,858	175	53.5
	1923	16,295	19,558	35,853	3.2	....	1,669	870	34.1	520	23.7	16,339	188	61.0
Pocahontas Region:														
Chesapeake & Ohio.....	1924	26,722	14,970	41,692	3.9	761	2,396	1,307	42.1	1,147	47.4	18,714	118	69.2
	1923	27,513	12,939	40,452	6.2	768	2,224	1,196	41.9	978	40.2	15,489	139	69.7
Norfolk & Western.....	1924	28,232	11,038	39,270	3.2	1,556	2,396	1,291	43.3	946	36.0	16,669	166	52.2
	1923	26,211	13,142	39,353	3.7	....	2,183	1,164	40.2	828	33.3	14,631	201	52.5
Southern Region:														
Atlantic Coast Line.....	1924	19,047	13,435	32,482	5.3	....	1,358	545	21.2	427	31.5	2,903	124	60.1
	1923	15,581	16,297	31,878	3.2	....	1,288	506	20.0	417	31.6	2,734	133	62.0
Central of Georgia.....	1924	3,798	5,368	9,166	6.3	....	1,163	535	23.8	618	34.6	2,972	160	71.6
	1923	2,616	5,938	8,554	4.6	....	1,110	503	23.2	590	34.7	2,649	161	72.1
I. C. (inc. Y. & M. V.)....	1924	39,454	25,605	65,059	3.4	....	1,778	787	26.7	702	40.0	7,368	139	68.1
	1923	36,514	34,020	70,534	5.0	....	1,712	756	28.3	692	40.2	7,886	152	75.0
Louisville & Nashville.....	1924	40,281	22,744	63,025	11.6	102	1,304	631	32.7	600	30.3	7,525	169	92.7
	1923	35,146	24,179	59,325	6.9	73	1,179	571	31.4	560	28.4	6,597	177	91.2
Seaboard Air Line.....	1924	9,710	10,478	20,188	4.5	....	1,366	561	22.5	496	32.4	2,824	148	72.8
	1923	9,731	10,591	20,322	14.0	....	1,231	507	21.4	444	29.3	2,538	167	69.2
Southern Ry.	1924	36,023	24,384	60,407	4.5	....	1,279	523	22.2	426	28.5	3,761	172	52.6
	1923	31,078	29,676	60,754	3.3	....	1,191	514	22.5	431	27.5	3,771	198	56.5
Northwestern Region:														
Chic. & North Western.....	1924	46,801	31,050	77,851	10.1	2,500	1,348	559	24.6	361	24.2	3,323	152	49.9
	1923	42,887	33,821	76,708	7.2	....	1,327	566	24.9	402	25.6	3,640	161	53.7
Chic., Milw. & St. P.	1924	53,843	28,390	82,233	7.7	....	1,603	717	25.5	465	27.7	3,483	156	51.9
	1923	48,646	29,295	77,941	6.4	....	1,473	662	25.4	495	29.5	3,509	158	55.4
Chic., St. P., Minn. & Om.	1924	3,467	9,776	13,237	8.3	1,123	1,070	432	22.2	362	24.4	2,778	170	58.8
	1923	47,075	19,233	68,308										

G. N. Booklet on History of Transportation Between Chicago and Orient

The Great Northern distributed copies of an illustrated booklet entitled, "The Orient and Captain Palmer" as Christmas greetings on its passenger trains between Chicago and the Pacific northwest on Christmas Day. Simultaneously this greeting was handed out upon steamships crossing the Pacific between Asiatic ports and Seattle, Wash., and a copy of the booklet was given to each of its employees and ticket agents of foreign lines in the United States. The booklet contains the story of transportation progress made in the Oriental trade medium from the period of the slow sailing vessel to the present fast steamship and the steam railway.

Standard Invoice Form

Representatives of purchasing organizations, industrial engineers and national bodies, meeting in the Department of Commerce on January 14, adopted standards for invoice, purchase order and inquiry forms for use in American business. The action was taken as the culmination of several years of effort of the National Association of Purchasing Agents, the Railway Accounting Officers' Association, the National Association of Cost Accountants, and the Division of Purchases and Stores of the American Railway Association. The meeting was held under the auspices of the Division of Simplified Practice, whose co-operation had been asked in bringing about the elimination of hundreds of variations in these business documents and in securing to American business houses a saving which was estimated at more than \$15,000,000 a year. Three sizes were adopted as standard for all three forms, 8½ by 7 in., 8½ by 11 in., and 8½ by 14 in. It was voted that the standards will become effective at once or as soon as existing stocks of forms are used up by the various business houses, and that they will remain in effect indefinitely.

Railroad Presidents Speak at St. Louis Dinner

A dinner, given by John J. Lonsdale, president of the National Bank of Commerce, St. Louis, Mo., on January 12 and attended by railroad, manufacturing and banking men of that city, was devoted to the consideration of transportation. The banquet hall was decorated to resemble a railroad yard and was amplified by a large size working model of a locomotive. As each railroad president was called by Toastmaster Lonsdale in his capacity as call boy, a block signal gave the speaker the proceed indication. As the speaker progressed, moving pictures showed the section of the country served by his line. The subjects and speakers were: "Dean of the Profession," by C. E. Schaff, president of the Missouri-Kansas-Texas, who was represented by C. N. Whitehead, executive vice-president; "Red, Yellow or Green," by Daniel Uphegrove, president of the St. Louis Southwestern; "No. 1925 on Time," by L. W. Baldwin, president of the Missouri Pacific; "Head In, Back Out," by Henry Miller, president of the Terminal Railroad Association of St. Louis; "Giving the Southwest the Highball," by J. M. Kurn, president of the St. Louis-San Francisco; "Keep Your Eye on the Board," by J. E. Taussig, president of the Wabash; and "All Aboard, Let's Go," by W. Frank Carter, former president of the Chamber of Commerce of St. Louis.

February Railway Club Meetings

L. G. Plant, assistant to the president of the National Boiler Washing Company, Chicago, will present a paper on Locomotive Feedwater Heating before the interim meeting of the Central Railway Club which will be held on February 12 at the Hotel Statler, Buffalo, N. Y.

The A. R. A. Rules of Interchange will be discussed at the February 2 meeting of the Cleveland Steam Railway Club at the Hotel Cleveland, Cleveland.

Methods of Analyzing Shop Output and Costs will be the subject of a paper to be read by J. E. Slater, special assistant to the general manager of the New York, New Haven & Hartford, before the meeting of the New England Railroad Club on February 10 at the Copley-Plaza Hotel, Boston, Mass.

A moving picture entitled, "Oxygen, the Wonder Worker," which was produced by the United States Bureau of Mines in connection with the Air Reduction Company, will be shown at the February 13 meeting of the St. Louis Railway Club. There will also be a demonstration of oxyacetylene application.

The Cincinnati Railway Club will hold a meeting on February

10, when a paper will be read on "Three-Cylinder Locomotives," by Perry T. Egbert, representative of the American Locomotive Company. The paper will be illustrated by moving pictures.

Program for Tie Producers' Convention

The following is the program for the annual convention of the National Association of Railroad Tie Producers which will be held at the Congress Hotel, Chicago, on February 5 and 6.

2 P. M., FEBRUARY 5

Opening exercises.

Reports of secretary and treasurer.

Reports of conditions in the tie industry by the district officers of the association.

10 A. M., FEBRUARY 6

What the McNary-Clarke Forestry Bill Will Mean to the Tie Producer, by Frederic Dunlap, secretary, Missouri Forestry Association, Columbia, Mo. The Value of Portable Saw Mills, by W. E. Swanger, general sales manager, American Saw Mill Machinery Company, Hackettstown, N. J. Reasons for the Wide Fluctuations in Tie Purchases, by F. D. Reed, vice-president and general purchasing agent, Chicago, Rock Island & Pacific, Chicago.

Effect of Wide Fluctuations in Tie Purchases on Tie Producers, by Timmons Harmont, president, The Harmont Tie & Lumber Company, Chillicothe, Ohio.

LUNCHEON 12:15

Address by Charles H. Markham, president, Illinois Central, Chicago.

FRIDAY AFTERNOON 2 P. M.

Lessons in European Tie Specifications, by Nelson Courtland Brown, professor forest utilization, New York State College of Forestry, Syracuse, N. Y. What the Railroad Engineer Expects in Cross Ties, by Earl Stimson, chief engineer maintenance of way, Baltimore & Ohio, Baltimore, Md.

Separation of Cross Ties by Grades and Groups, by Frank McCrory, chief tie inspector, Chicago, Rock Island & Pacific, Little Rock, Ark.; A. R. Fathman, vice-president, Western Tie & Timber Company, St. Louis, Mo., and George E. Rex, vice-president, National Lumber & Creosoting Company, Kansas City, Mo.

Round table discussion on Labor Problems in Cross Tie Production, Improved Methods of Loading Ties in Cars, and other subjects of interest to the association.

Closing business.

Outlook for Alaska Railroad

The conditions and prospects facing the operation of the government's Alaska Railroad in the near future were discussed by Noel W. Smith, general manager of the road, in testimony before the House appropriations committee in support of a proposed appropriation of \$2,000,000 for the maintenance and operation of the road for the fiscal year 1926. The road had an appropriation of \$1,000,000 for 1925 and he said, would need an additional \$300,000. Mr. Smith said in part:

"It is characteristic of the Alaskan to be optimistic and to predict that some discovery or development is soon to occur that will cause rapid development of the Territory. The high character of many of the men holding this opinion makes it appear that there may be much reason to expect such an occurrence; but in the absence of such an event being an accomplished fact, the increase in earnings of the Alaska Railroad can only be considered based on the development now active. On this basis, the earnings of the railroad can be expected to only increase very gradually from year to year, but every indication points to such an increase."

"Viewing the situation from a business standpoint and on the assumption that the road may be operated at a loss, for the purpose built, namely, the development of the Territory, the procedure that will bring about the earliest date at which the railroad will be self-supporting, is the appropriating of liberal sums for completion of road and equipment within the limit of judicious expenditure and without adding materially to the investment in work equipment or the adoption of extravagant means and methods of construction."

"Such a policy will avoid the waste of money incident in patching up temporary construction that must be later replaced by permanent construction, decrease the hazards of operation, and minimize fire risk. It is strongly felt that these economic aspects warrant careful consideration in appropriating funds. Appropriations made for maintenance and operation that effect no improvement, that do not result in decreased cost of maintenance and operation, or do not decrease the hazard of operation are in a measure lost, because each year they must again be performed, but capital expenditures that effect permanent improvements, return in savings in maintenance and operation more than interest on the investment, and can clearly be considered as loans and not donations."

"The outstanding facts of the Alaska Railroad are that maintenance and operation cost can be reduced by the intelligent expenditure of funds for completion of road and equipment; that the saving effected by such expenditure will exceed the interest on the money expended; that by so reducing maintenance and operation costs the time will be shortened for appropriation for deficits, which must be made if the road is to continue in operation; that, while there is reason to be hopeful of large increases in earnings in the near future, all that can be definitely predicted is a slow and gradual increase."

Pere Marquette Has Correspondence

Course in Efficient Car Handling

A correspondence course for the instruction of its employees in the principles of efficient car handling as established by the present car service and Per Diem rules was arranged by the Pere Marquette several months ago. The course is available to all employees regardless of their occupation and 282 have enrolled in it. Although some dropped out after a few lessons, a con-

siderable number have consistently studied and reported on the lessons submitted.

The course consists of six lessons, each accompanied by a list of questions which are to be answered and returned before the succeeding lesson is released. The answers to these questions are carefully checked to determine whether the employee has correctly interpreted the facts as given in the lesson and all misunderstandings are corrected by letter. The subjects discussed in the six lessons are as follows: Lesson No. 1 covers the general theory of car distribution with tables showing the ratio of loaded and empty car miles to total car miles, the average number of cars on line per day and the average miles per car per day, with explanations of the various terms used and methods by which the comparative statements are arrived at. Lesson No. 2 quotes car service rules governing the handling of empty cars of connecting railroads and charts the junction points of the Pere Marquette with connecting lines. Lesson No. 3 explains the Pere Marquette's system of car distribution, directing attention to the geographical location of the lines, as well as to the different kinds of freight general office car records, manifest freight and car tracing, and handled in local territories. Lesson No. 4 explains the interchange report and the Per Diem rule. Lesson No. 5 discusses the Lesson No. 6 is devoted to car demurrage.

Program for the Wood Preservers' Convention

The American Wood Preservers' Association will hold its twenty-first annual convention at the Congress Hotel, Chicago, on February 3-5. The program of this meeting follows:

TUESDAY MORNING

Opening exercises.
President's address.

Paper on "The Comparative Resistance of Eighteen Species of Wood Destroying Fungi to Zinc Chloride," by C. Audrey Richards, assistant pathologist, Bureau of Plant, Industry, in co-operation with the Forest Products Laboratory.

Paper on "A Theory on the Mechanism of the Protection of Wood by Preservatives," Part VI, continuation of the study of hydrocarbons, by Ernest Bateman, chemist in forest products, Forest Products Laboratory, Madison, Wis.

TUESDAY AFTERNOON

Report of Committee on Preservatives.

Report of Committee on Ties, including presentation of a paper on "A One Movement Process for Impregnating Timber with Zinc Chloride and Petroleum," by A. M. Howald, Mellon Institute of Research, Pittsburgh, Pa.

WEDNESDAY MORNING

Report of Committee on Fir Ties.
Report on Committee on Car Lumber.
Report on Committee on Piling.

Paper on "The Relative Cost of Treated and Untreated Timber," by J. D. MacLean, engineer in forest products, Forest Products Laboratory, Madison, Wis.

WEDNESDAY AFTERNOON

Paper on "Wood Preservation in Europe," by C. Marshall Taylor, superintendent Port Reading treating plant, Reading Company and Central Railroad of New Jersey, Port Reading, N. J.

Report of Service Bureau Board.

Report of Committee on Poles, Non-Pressure.

Paper on "When Is Rot Not Rot?" by W. H. Long.

Report of Committee on Tie Service Records.

THURSDAY MORNING

Report of Committee on Posts.

Report of Committee on Material Handling.

Report of Committee on Steam Treatments.

Paper on "Temperature and Moisture Changes in Wood Under Steaming Treatment," by R. M. Wirk, engineer in forest products, Forest Products Laboratory, Madison, Wis.

New business, including election of officers and selection of 1926 meeting place.

Canadian Premier Predicts Lively Railway Discussion at Coming Session of Parliament

Predicting that the transportation question would be as important as the tariff, if not more so, in the coming session of the Canadian Parliament Premier Mackenzie King, speaking at a large political gathering in Toronto last week dealt with the present position of the Canadian National Railways and paid a high tribute to the work done by Sir Henry Thornton. That part of his two-hour speech which referred more particularly to the railway problem follows:

"I think it is generally admitted that it would have been difficult, if not impossible, to have secured a railway executive better suited by tradition, training and temperament to carry out the gigantic task of co-ordinating and controlling the several lines comprising what is now the Canadian National System than Sir Henry Thornton; and I think Sir Henry Thornton will be the first to say that

in the discharge of his highly responsible and onerous duties he and his Board of Directors have been given by the Government a perfectly free hand.

"The showing with respect to the Canadian National Railways is as yet far from what we would like to see it, and what it should be if the railways are to become a national asset, as we believe they will become, if given a proper chance, instead of remaining a national liability, as up to the present they have continued to be, but it is a showing vastly more favorable than that which existed at the time we took in hand their co-ordination and consolidation and placed their management in the hands of Sir Henry. An examination of the operating deficits of the Canadian National lines (not including the Grand Trunk) shows the following improvement in recent years:

1920	.....	\$36,842,970
1921	.....	16,092,901
1922	.....	9,736,318
1923	.....	6,018,119

"In 1923 the inclusion of the Grand Trunk, however, turned the deficit of \$6,018,119 into an operating surplus of \$11,656,422; and so for the first time since the great railway debacle we find in 1923 a consolidated Canadian National Railway System producing an operating surplus of \$11,656,422."

As a commentary upon the Prime Minister's speech Sir Henry Thornton, addressing the University Club in Ottawa later in the week, declared that within the Canadian National the serpent of politics was much less feared than the scorpion of sectionalism. The present government, he declared, had never even endeavored to lure him into using the railway for political purposes, and in all fairness he wished to say the same of the Conservative opposition in Parliament. Some temporary lapses had occurred in the heat of battle, but such was to be expected. The government and the opposition had both given him every indication that the Canadian National was to be given a fair trial.

John Fritz Medal Awarded to John F. Stevens

Award of the John Fritz Gold Medal to John F. Stevens of New York City "for great achievements as a civil engineer, particularly in planning and organizing for the construction of the Panama Canal; as a builder of railroads, and as administrator of the Chinese Eastern Railway," has been announced by the Engineering Foundation.

This medal was established in 1902 in honor of John Fritz, pioneer in the American iron and steel industry. It is bestowed annually for notable scientific or industrial achievement and is the highest honor bestowed by the engineering profession in this country.

The award was made by a board of 16 representatives of the American Societies of Civil, Mining and Metallurgical, Mechanical and Electrical Engineers, having a total membership of 53,000.

Mr. Stevens was head of the American Railway Mission to Russia in 1917-1918. He was also director of a corps of railway experts in Manchuria. From 1919 to 1923 he was president of the Interallied Technical Board supervising the Siberian Railways. While holding this office, with headquarters at Harbin, Manchuria, he supervised the technical and economic operation of the Siberian and Chinese Eastern Railway.

Mr. Stevens was chief engineer of the Panama Canal from 1905 to 1907 and in 1907 acted as director of the Isthmian Canal Commission. His organization of personnel of the canal forces and especially of the transportation system contributed largely to the effective construction work on the canal under his successor, General Goethals.

At various times in earlier periods of his life, Mr. Stevens was chief engineer, vice-president, or manager, of the Great Northern, the Chicago, Rock Island & Pacific Railway, the New York, New Haven & Hartford, and president, successively, of the Spokane, Portland & Seattle and the Oregon Electric, and other western railroads.

The John Fritz Gold Medal has been awarded to the following engineers: John Fritz, Lord Kelvin, George Westinghouse, Alexander Graham Bell, Thomas Alva Edison, Charles T. Porter, Alfred Noble, Sir William Henry White, Robert W. Runt, John Edson Sweet, James Douglas, Elihu Rhomson, Henry Marion Howe, J. Waldo Smith, George W. Goethals, Orville Wright, Sir Robert A. Hadfield, Charles Prosper Eugene Schneider, Senator Guglielmo Marconi, Ambrose Swasey.

Traffic News

The New York, New Haven & Hartford, which is running a number of special trains into the zone of the total eclipse of the sun today, issued several days ago a neatly-printed, 12-page folder dealing with the astronomy of the eclipse, solar eclipses in history and information as to attendant phenomena which should be watched for.

Ten railway presidents composing the Western Railways Committee on Public Relations, issued a statement on January 12 opposing the proposal which has been made from time to time that there should be a general readjustment of freight rates that would involve a special reduction of the rates on farm products. The statement calls attention to the fact that such a readjustment of rates would be especially harmful to western railways since 21 per cent of their freight tonnage consists of farm products. Attention was also called to the decision of the Interstate Commerce Commission in the western grain rate case during July when the commission held that the western roads have not been earning a fair return. The statement also refers to the commission's report in which it calls attention to the effect that would be produced upon the transportation service the western railways could render the farmers by changes in rates that would unduly reduce the earnings of the railways that serve them.

Hearing on Protest Against Express Rates

A hearing before the Interstate Commerce Commission on the application of western and southern roads for an injunction to prevent the American Railway Express Company and the Interstate Commerce Commission from putting into effect a reduction of express rates on March 1, was opened in St. Louis, Mo., on January 19. The petition was filed in St. Paul, Minn., on December 4 by 53 roads. The American Railway Express Company has taken a neutral stand, thereby leaving the issue between the railroads and the Interstate Commerce Commission which initiated the investigation resulting in the order for adjusted rates. The basic rate in prairie and west coast states would be reduced from 35 to 31 cents and in the southern states from 30 to 28½ cents. The same order would increase the basic rates in the eastern states from 24 to 26 cents.

Coal Rates Set for Hearing

Four rate cases affecting the coal industry in the west, have been assigned for hearing by the Interstate Commerce Commission. The complaint brought by the Iowa Board of Railroad Commissioners is set for hearing at Des Moines, Iowa, on February 20. This complaint covers the level of rates on coal from Inner and Outer Crescent mines to Iowa destinations. A complaint of the Alabama Mining Institute is set for hearing at Birmingham, Ala., on March 3. In this case it is alleged that the rates from Alabama to destinations in the Mississippi valley are unduly prejudicial to Alabama mines and unduly preferential to mines in southern Illinois and western Kentucky. The complaint of the Illinois Thfrd Vein Coal Company and others against the rates on coal from the northern Illinois fields to destinations in Wisconsin, Minnesota and Iowa, has been set for hearing at Chicago on February 25 while a western Kentucky case, Docket 16340, has been set for hearing in Chicago on March 4.

Freight Traffic for November

Freight traffic during the first 11 months in 1924 was 7 per cent below that for the corresponding period in 1923, according to a statement by the Bureau of Railway Economics. It amounted to 394,442,053,000 net ton miles, a decrease of 29,737,930,000 net ton miles.

Due mainly to the fact that loading of coal, coke and ore was below that for the preceding year, freight traffic in the Eastern district during the first 11 months, showed a decrease of 10.8 per cent compared with the corresponding period in 1923. In the

Southern district there was a decrease of 5.3 per cent, while in the Western district a decrease of 2.1 per cent was reported.

For the month of November alone, freight traffic amounted to 38,049,097,000 net ton miles, a decrease of only 109,126,000 net ton miles or three-tenths of one per cent as compared with November, 1923. The Eastern district reported a decrease of 1.3 per cent, while the Western district reported a decrease of one-fifth of one per cent, and for the roads in the Southern district an increase of 3.2 per cent was reported.

The daily average movement per freight car in November was 28.5 miles. This was a decrease of four-fifths of a mile under the daily average for November, 1923, and a decrease of 2.2 miles under the average for October, 1924.

Freight Charges on Livestock

Freight charges on live stock shipments represent only 5.6 cents out of each dollar the purchaser paid for livestock, while the producer or seller at point of shipments realizes net proceeds of 91.4 cents, other costs of distribution being 3 cents, according to a study just made by the Bureau of Railway Economics into the relationship of commodity prices to transportation costs.

The wide spread in the prices received in the markets for livestock of good quality and that of poorer grade, is clearly brought out in the study, which shows that this spread accounts for the variations in the percentage of the price absorbed in freight charges. It appears that the better the grade sold, the greater the proportion of the dollar which went to the purchaser, and the smaller the proportion that was absorbed in freight charges.

This study, which relates entirely to livestock, was based on sales of more than 6,000 carloads of cattle, calves, hogs and sheep made at 10 principal markets in the United States during the year ended October 6, 1924.

The study tends to show the following:

1. That the freight charges are a relatively small factor in the price paid to the seller for livestock.
2. That apparently the principal factors influencing the seller's net proceeds are the quality of the stock and marketing conditions.
3. That in the marketing of cattle and calves, hogs and sheep, the transportation costs permit of the free movement of livestock to the various marketing centers from a wide range of territory.

"Freight charges on cattle and calves," according to the Bureau bulletin, "represent 5.8 per cent of the price paid by the purchaser; other costs of distribution were 2.8 per cent, while the net proceeds to seller at shipping point were 91.4 per cent of the price. For hogs, the freight charges were 5.1 per cent with other costs of distribution 3.2 per cent, which leaves to the seller at shipping point net proceeds of 91.7 per cent. For sheep, freight charges were 6.0 per cent; other costs of distribution 3.0 per cent and net proceeds to the seller at shipping point 91.0 per cent."

The study also indicates that the percentage of the price paid by the purchaser, which is absorbed in freight charges, varies greatly, and that the principal cause of these variations is the difference in kind and quality of livestock. This conclusion, that the principal factors influencing livestock prices are the quality of stock and marketing conditions, is borne out by a compilation of prices paid for beef steers of various grades sold at Chicago during the year ended on November 8, 1924.

The figures show that out of 1,304,907 head of steers sold during the year, 132,432, or 10.2 per cent, were graded as "choice and prime" and sold at an average price of \$10.94 per hundred pounds; 365,401 head, or 28 per cent, were graded as "good" and sold for \$10.06 per hundred pounds; 638,403 head, or 48.9 per cent, were graded as "medium" and sold for \$8.88 per hundred pounds; 168,671 head, or 12.9 per cent, were graded as "common" and sold for \$7.27 per hundred pounds. This means a difference between the "common" and "choice and prime" prices of \$3.67 per hundred pounds.

For "choice and prime" grade, the highest average weekly price paid during the period was \$12.15 per hundred pounds when sales were light, and the lowest average price was \$10.22 when sales were heavy, a fluctuation of \$1.93 per hundred pounds.

For "common" grade, the highest average weekly price was \$8.08, during the period when sales were light, and the lowest price was \$5.85, when sales were heavy, a fluctuation of \$2.23 per hundred pounds.

The spread in average price between "common" and "choice and prime" grades for the individual weeks varied from \$3.19 to \$5.16 per hundred pounds.

Commission and Court News

Interstate Commerce Commission

Southern Class Rate Argument

The Interstate Commerce Commission devoted four days beginning January 14 to hearing arguments of carriers and shippers on the proposed report by Commissioner Eastman outlining a tentative revision of class rates in the Southeast resulting from the commission's southern class rate investigation. The southern roads in a supplemental brief on the results of a traffic test covering the month of April, 1924, estimated the loss in revenues which would result from the application of the proposed rates at not less than \$9,204,398 a year, or 7.93 per cent, and while it was brought out that increases in intrastate rates and cancellations of less than car-load commodity rates might tend to reduce the percentage of reduction to 4.29 per cent, the carriers contended that the reduction would be certain, while the increases were speculative and not to be depended upon. Henry Thurtell and C. J. Rixey, representing the southern carriers, in general contended for the adjustment proposed by the roads in this case as a better one than that proposed by Commissioner Eastman, saying that the carriers proposed revision is a continuation of the revision they had put in effect on January 1, 1916, to comply with a fourth section order of the commission. They expressed regret that an effort to comply with the fourth section should have resulted in this case in a tentative report threatening such a large loss in revenues. Three members of southern state railroad commissions, Commissioners Burr of Florida, Perry of Georgia and Patterson of Alabama, sat with the federal commission during the arguments. Time was assigned to about 40 traffic managers and attorneys.

Personnel of Commissions

George D. Squires, state insurance commissioner of California, and Ezra Decoto, district attorney of Alameda county, have been appointed members of the Railroad Commission of California by Governor Richardson of that state. They succeed C. L. Seavey, now president of the commission, and J. T. Whittlesey, whose terms expired on December 31, 1924.

The names of Daniel Lawrence Turner, W. J. Wilgus, and W. D. Pence have been submitted to President Coolidge by the American Association of Engineers for consideration in filling the vacancy on the Interstate Commerce Commission which is expected soon on the resignation of Commissioner Potter. It is reported that Thomas F. Woodlock, a financial writer, is one of those most seriously considered by the President.

State Commissions

Holding that there were no unsafe features in the operation of gasoline cars on the branch of the Erie between Harriman, N. Y., and Newburgh and that the question of failure of the road to give through service from points north of Harriman to Jersey City was a matter for the Interstate Commerce Commission to consider, the Public Service Commission of New York has dismissed complaints of patrons of the branch against service provided by the railroad. At the hearings it was developed that the principal complaint of the patrons was that they no longer enjoyed through service to Jersey City, it now being necessary to change at Harriman. The commission held that it was without power to act on this phase of the complaint. It held that service now rendered on the branch was reasonably safe.

THE INTERSTATE COMMERCE COMMISSION's investigation into coal rates from the Pacific coast and intermediate territory began at a hearing in the Great Northern Hotel, Chicago, on February 19, before Commissioner Campbell.

Labor News

The present scale of wages to commercial telegraphers in Canada should remain unchanged, according to the majority report of the Board of Conciliation which recently considered the dispute between the commercial telegraphers and their employees, the two principal railway companies in the Dominion. While F. H. Phippen, representing the employers, favored a decrease in the present schedule affecting wages and overtime, he accepts the finding for a status quo settlement recommended in the report.

The Gulf, Colorado & Santa Fe has negotiated an agreement with the engine service employees similar to that made by the Southern Pacific which grants wage increase of approximately six per cent and changes a few minor working rules. The Atchison, Topeka & Santa Fe, Eastern, Western and Coast Lines, are now meeting the representatives of Brotherhood of Locomotive Engineers and Brotherhood of Locomotive Firemen and Enginemen to reach agreements affecting the employees of those lines. The Terminal Railroad Association of St. Louis has also signed an agreement with engine service brotherhood on the Southern Pacific basis, calling for the wage increase without changes of working rules.

North Western Reaches Agreement with Enginemen

An agreement calling for a wage increase of approximately 6 per cent without changes in important working rules, similar to that made on the Southern Pacific, has been approved by the Chicago & North Western and its engine service employees represented by the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen. Although the North Western was one of the roads involved in the recent Labor Board decision which granted the wage increase to the enginemen only on condition that they accept a number of changes in important working rules, it followed the example of the Southern Pacific and the Western Pacific in not insisting that this decision be made the basis of an agreement. The policy of the brotherhoods has been to ignore the board's decision and to force agreement to their demands of wage increases without changes in working rules through negotiations with individual managements in which strike threats are freely made. So far as is known, no railway has succeeded in making an agreement with its engine service employees on the basis of the Labor Board's decision, although one road, the Colorado & Southern, is known to have insisted that it will make no agreement on any other terms.

Clerks Granted Wage Increase by Labor Board

The clerical employees of 45 railways have been granted wage increases of from one to two cents an hour and a number of favorable working rules by the Railroad Labor Board in Decision No. 2776, made effective January 16. The employees, who were represented by the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees, received wage increases as follows: clerical supervisory forces, clerks with more than one year's experience, train and engine crew callers and other station employees, and common laborers in and around stations, storehouses and warehouses, two cents an hour; clerks with less than one year's experience, janitors, elevator operators, watchmen, freight handlers and truckers, one cent an hour; office boys, messengers and telephone switchboard operators, no increase. Sealers, scalers and fruit and perishable inspectors were granted a rate of pay one cent an hour above truckers' rates and stowlers, callers, locators and coopers were given a rate of two cents an hour above truckers' rates.

The Labor Board decision also granted annual vacations with pay to clerks with one or more years experience in railway service, the length of vacations to depend upon length of service. Sick leave with pay was also granted in cases where the work of the absent employees is carried on by other employees without cost to the management, the length of sick leave depending also upon length of service. The rate of time and one-half for Sunday and legal holidays was established.

Foreign Railway News

Turkish Government Equipment Inquiry

The Turkish government is inquiring for 700 km. of rails, several locomotives and from 15 to 20 passenger cars—all for the Anatolian Railway—according to Trade Commissioner J. E. Gillespie at Constantinople.

Great Western of Brazil to Buy Equipment

During the next 15 months the Great Western of Brazil will purchase 25 box cars, 25 gondola cars, 5 tank cars and 10 locomotive tenders in addition to a large quantity of track and bridge material, according to Assistant Trade Commissioner Pierrot at Rio de Janeiro.

British Wages Board Refuses to Increase

Mileage Basis for Enginemen's Pay

The National Wages Board of Great Britain has decided that the mileage basis for the pay of enginemen, which now stands at 140 miles as equivalent to an eight-hour day, should not be increased to 150 miles, as requested by the companies and as agreed at the time the enginemen's strike was settled a year ago.

Through Tickets in Central Europe Planned

Austria and neighboring states are discussing the feasibility of reintroducing through international tickets according to Assistant Trade Commissioner Baldwin at Vienna. Because of the fluctuations in the value of money in the various countries through tickets were dispensed with and separate tickets have to be purchased at each international boundary for the journey in that country. It is now felt that the currencies of Central Europe, while depreciated, are sufficiently stable to permit the reintroduction. As a further step in facilitating commerce in Europe, the government of Poland is at present having conferences with the government of the Russian Soviet Republic with the view of arriving at an agreement for the interchange of passengers and freight over the international boundary, according to Assistant Trade Commissioner Hodgson at Warsaw.

British Labor Demands Wage Increases

The National Union of Railwaymen which includes all classes of railway employees on the British railways (although, as a matter of fact, the greater proportion of enginemen and clerks belong to craft unions of their own) has presented demands for increased wages and improved working conditions for all classes of employees. The Railway Clerks' Association has joined the N. U. R. in the demand as far as clerks are concerned. These demands, if granted, would raise the wage bill of the railways by 25 per cent. Some of the more important demands are:

Pensions for all employees at the age of 60.

The principle of the guaranteed day and the guaranteed week to be extended to all classes of employees.

Sixteen shillings a day minimum for all enginemen and motormen; 12s. 6d. for all firemen and helpers.

A maximum week of 44 hours for freight house and cartage, maintenance-of-way and signal and telegraphic employees.

Working hours to include meal times.

Sliding scale of wages in shops to be abolished and a flat rate of £4 a week paid to all craftsmen of five years' experience.

Semi-skilled men, assistant mates, and helpers to receive a basic rate of £3 10s. The unskilled to receive a basic rate of £3.

Minimum holidays for conciliation grades (i. e., transportation department employees) and shopmen of 12 days (instead of six) between May 1 and September 30.

In the clerical grades, men who have been standing at the maximum of their class for two years, if not promoted, to receive the minimum figure of the next higher class and proceed automatically to the maximum salary of that class after a further two years.

The increases proposed for clerks and other salaried employees would average about £10 a year; for transportation department men, from 10s. to £1 a week.

Equipment and Supplies

Locomotives

RUTLAND RAILROAD.—See New York Central.

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for 10, 0-8-0 switching locomotives.

THE NEW YORK CENTRAL is inquiring for 3 Pacific type locomotives for the Rutland Railroad.

THE CHICAGO, WEST PULLMAN & SOUTHERN has ordered one 0-6-0 switching locomotive from the Baldwin Locomotive Works.

THE ARARANGUA, CIA SANTA CATHARINA CARBONIFERA DE BRAZIL has ordered 3 Pacific type locomotives from the Baldwin Locomotive Works.

THE CHESAPEAKE & OHIO has given a contract to the American Locomotive Company for building 48 locomotive boilers and fire boxes. This work is to be carried out at the Richmond, Va., plant of the locomotive company.

Freight Cars

THE NATIONAL PLATE GLASS COMPANY is inquiring for 35 high side gondola cars.

THE FORD MOTOR COMPANY has ordered 30 caboose cars from the Standard Steel Car Company.

THE MISSOURI PACIFIC is inquiring for repairs on 250 wooden box cars and 2,250 wooden gondola cars.

THE CARNEGIE STEEL COMPANY has ordered 12 gondola cars of 70 tons' capacity from the Standard Steel Car Company.

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for 1,200 box cars of 40 tons' and 400 gondola cars of 50 tons' capacity.

Passenger Cars

THE NORTHERN PACIFIC, reported in the *Railway Age* of December 27 as inquiring for 14 express refrigerator car underframes, has ordered this equipment from the Siems-Stembel Company.

THE NEW YORK CENTRAL has ordered from the Standard Steel Car Company 29 multiple unit car bodies, for suburban service. Inquiry for this equipment was reported in the *Railway Age* of December 13.

Iron and Steel

THE PENNSYLVANIA has placed orders for 100,000 tons of rail as follows: Bethlehem Steel Company, 45,000 tons; Carnegie Steel Company, 35,000 tons; Illinois Steel Company, 14,000 tons, and Inland Steel Company, 6,000 tons. The Pennsylvania has carried over 56,000 tons of rail from 1924 so that it will now have available 156,000 tons for its 1925 requirements.

Track Specialties

THE CHICAGO, BURLINGTON & QUINCY has divided an order for 4,000 tons of tie plates, 20,000 kegs of spikes, 15,000 kegs of bolts and a quantity of splice bars between the Inland Steel Company, the Illinois Steel Company and the Colorado Fuel & Iron Company.

Miscellaneous

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, February 3, at the office of W. B. Pollock, manager of the marine department, for the construction of 10 steel gasoline hoisting barges. Bids will also be received until 12 o'clock noon, February 4, for the construction of one tug boat to be equipped with Diesel engine and electric transmission.

Supply Trade News

The Bucyrus Company, South Milwaukee, Wis., is constructing a shipping building and carpenter shop at Evansville, Ind.

The Okonite-Calender Cable Company, Inc., has purchased a plant in Paterson, N. J., where it will manufacture lead-covered paper insulated cables.

A. C. Roeth of the sales department of the Inland Steel Company, with headquarters at Chicago, has been promoted to assistant to the vice-president.

The McMyler-Interstate Company, Cleveland, Ohio, on February 1 will remove its Detroit, Mich., office from 1701 Washington Boulevard building to 1156 Book building.

The Crane Company, Chicago, has purchased property at Market and Pearl streets, Oshkosh, Wis., where it plans to erect a two-story branch shop, warehouse and office building 78 ft. by 240 ft.

William P. Kirk, district manager of sales of the Niles-Bement-Pond Company with headquarters at Cincinnati, Ohio, has been transferred to New York and will be succeeded by E. H. Gates, manager of Rochester, N. Y., branch office.

Joseph W. Irwin, until recently president of the Mitchell Spring & Manufacturing Co., Johnstown, Pa., has resigned to become connected with his former associates as general superintendent of the Fort Pitt Spring & Manufacturing Co., Pittsburgh, Pa.

D. Maxwell, district manager of the Williams Tool Corporation, with headquarters at Chicago, has been transferred to Cleveland, Ohio, and will be succeeded by William J. Eberlien, store manager of the Greenfield Tap & Die Corporation with headquarters at Chicago.

B. A. Lundy, vice-president of the Signal Construction Company, Albany, N. Y., has been elected vice-president and a director of Railroad Accessories Corporation. Mr. Lundy's headquarters will be at the main office of the Railroad Accessories Corporation, 50 Church street, New York.

C. T. Knissely, president of the Knissely Brothers Manufacturing Company, manufacturers of hollow metal fireproof doors and window sills has been appointed sales manager of the Railway Brakeshoe & Foundry Company, with headquarters in the newly opened office, 5 South Wabash avenue, Chicago.

The Massey Concrete Products Corporation has established a district sales office in room 528 Dixie Terminal building, Cincinnati, Ohio, for district comprising Ohio, Indiana, Kentucky, West Virginia and part of Pennsylvania. W. Lyle McDaniel, representative of the pole department, with headquarters at Chicago, has been promoted to resident manager at Cincinnati.

J. G. Grimshaw, auditor of the Chicago Pneumatic Tool Company, has been promoted to treasurer to succeed J. L.

Price, resigned. H. E. Byer, formerly in charge of vacuum pump sales for the Ingersoll-Rand Company, has been appointed manager of the condenser and vacuum pump sales for the Chicago Pneumatic Tool Company, with headquarters at New York.

Colonel C. H. Crawford has become associated with Dwight P. Robinson & Company, Inc., New York. Colonel Crawford served with the United States Engineers during the war, and subsequently was connected with the Nashville, Chattanooga & St. Louis. From 1919 to the present time he was general representative of the Baldwin Locomotive Works, in Brazil, with headquarters at Rio de Janeiro.

The Associated Machine Tool Dealers has been organized by manufacturers and dealers in machine tools to promote a closer relationship and co-operation between manufacturers and dealers. Officers of the new organization are: president, G. E. Merryweather, of the Motch & Merryweather Machine Co., Cleveland, Ohio; vice-president, Marshall Prentiss, of Henry Prentiss & Co., New York; secretary, T. W. Carlisle, of the Strong, Carlisle & Hammond Co., Cleveland; and treasurer, G. H. Cherrington of the Brown & Zortman Machinery Co., Pittsburgh, Pa.

L. D. Whitaker, who recently severed his connection with the United States Steel Corporation, has become associated with Ralph W. Payne in the railway supply business at Washington, D. C. He was born at Salisbury, N. C., on May 25, 1898. He was educated in the North Carolina public schools and is a graduate of Emerson Institute, Washington, D. C., and the Law School of George Washington University, also spending three years in the arts and sciences department of that institution. He was connected with the American Surety Company of New York, from 1914 to 1917 and then entered the Washington sales office of the United States Steel Corporation, where he has since been located with the exception of one year in the marine corps during the war.

The National Car Wheel Company and the Southern Wheel Company were merged on January 1, and are now operating under the name Southern Wheel Company. This company is a subsidiary of the American Brake Shoe & Foundry Company. The merged company has plants at Pittsburgh, Pa.; Rochester, N. Y.; Cleveland, Ohio; Sayre, Pa.; St. Louis, Mo.; Birmingham, Ala.; Atlanta, Ga.; Savannah and Portsmouth, Va. The general offices are in the Keystone building, Pittsburgh, Pa., and the officers are as follows: W. F. Cutler, president, New York City; Frank C. Turner, first vice-president, Pittsburgh; J. Brookes Spencer, vice-president in charge of sales, Pittsburgh; C. C. Eadsdale, operating vice-president, Birmingham; C. M. Bower, vice-president, New York City; H. E. McClumpha, operating vice-president, Pittsburgh; J. Francis Weisbrod, assistant vice-president, Pittsburgh; Andrew Muirhead, treasurer, Pittsburgh; W. M. McCoy, controller, New York City; E. C. Hof, assistant controller, Pittsburgh, and G. M. Judd, secretary, New York City.

The Okonite Company will open an office at 310 South Michigan avenue, Chicago, on February 1, and will take over the sale of Okonite products in the western territory. Charles E. Brown, vice-president of the Central Electric Company, has been appointed vice-president in charge of the territory west of Pittsburgh and east of the Rocky Mountains of the Okonite Company, with headquarters in Chicago. A. L. McNeill, manager of the railroad department of the Central Electric

1924	Number freight cars on line	CARS AWAITING REPAIRS			Per cent of cars awaiting repairs	REPAIR SITUATION		
		Heavy	Light	Total		Month	Heavy	Light
January 1	2,279,363	118,653	39,522	158,175	6.9	December	87,758	2,073,280
February 1	2,269,230	115,831	45,738	161,569	7.1	January	76,704	2,083,583
March 1	2,262,254	119,505	49,277	168,782	7.5	February	70,056	2,134,781
April 1	2,274,750	125,932	46,815	172,747	7.6	March	77,365	2,213,158
May 1	2,271,638	131,609	47,666	179,275	7.9	April	75,352	2,074,629
June 1	2,280,295	138,536	50,683	189,219	8.3	May	73,846	2,130,284
July 1	2,279,826	144,912	49,957	194,869	8.5	June	70,480	1,888,899
August 1	2,278,773	153,725	49,139	202,864	8.9	July	72,347	1,567,430
September 1	2,296,589	158,200	51,909	210,109	9.2	August	71,863	1,420,482
October 1	2,304,020	157,455	48,589	206,044	8.9	September	74,295	1,372,277
November 1	2,313,316	150,703	39,840	190,543	8.2	October	87,008	1,446,822
December 1	2,304,676	146,286	42,854	189,140	8.2	November	75,954	1,304,924

Data from Car Service reports.

Company, has been appointed manager of the railroad department. E. H. McNeill, railroad sales representative of the Central Electric Company, has been appointed sales engineer. Roy N. Baker, railroad sales representative of the Central Electric Company has been appointed sales engineer. L. R. Mann, sales representative of the Central Electric Company, with headquarters at St. Louis, has been appointed manager of the St. Louis office. Joseph O'Brien, railroad sales representative of the Central Electric Company, has been appointed sales representative, with headquarters in Chicago. C. E. Brown, Jr., country sales manager of the Central Electric Company, has been appointed manager of the light and power department.

Obituary

L. J. Gwinn, for many years an instructor on the Westinghouse Air Brake Company's instruction car, died suddenly on January 5 in Pittsburgh while returning to his home from work in the evening. Mr. Gwinn was formerly connected with the Boyden Brake Company at Baltimore, and went to the Westinghouse Company in 1906 as an inspector. Later he was assistant instructor in the Westinghouse Air Brake instruction car, and was finally put in charge. He was transferred from the instruction car some years ago, to the engineering department at Wilmerding, and at the time of his death was acting as a technical writer in the patent department.

Trade Publications

SAND DRYING EQUIPMENT.—The Roberts & Schaefer Company, Chicago, has issued an eight-page bulletin describing the Perfection Cone stove sand dryer and the Beamer sand dryer, together with other equipment required for a complete, up-to-date locomotive sanding station. The bulletin is well illustrated with line drawings and photographs.

STEEL PRESERVATIVE PAINTS.—A 24-page, illustrated booklet has been issued by Toch Brothers, New York City, which describes the various forms of steel preservative paints which this company manufactures. The text matter includes a detailed description of each of the various kinds of paints, the purpose for which it is best fitted, and the recommended manner of applying it. This subject-matter is indexed at the back of the booklet with general headings covering types of construction and character of surface. The illustrations show a variety of structures protected by the paints of this company.

THE BEAUMONT DRAG SCRAPER.—In a 16-page pamphlet the Roberts & Schaefer Company presents a description of the Beaumont cable drag scraper and its application to the storage of coal and its reclamation with the same equipment. The scraper is used in conjunction with a track hopper and elevator skip whereby the coal is received from cars, dumped into a pile adjacent to the hopper and then spread over the desired area by means of the scraper. In reclaiming the operation is reversed. The scraper draws the coal to the hopper, into which it descends by gravity, to be rehoisted for loading out of cars. The equipment may also be used as an adjunct to a mechanical coaling station.

24-HOUR CONCRETE.—The Atlas Lumnite Cement Company, New York City has recently issued a 32-page, illustrated booklet descriptive of the alumina cement which this company manufactures. The booklet treats of a wide variety of possible uses for Lumnite, as this cement is called, such as road crossings, bridge approaches, abutments and piers, repairs, floors, platforms, etc., at points where it is necessary to do the work with the least disturbance to traffic, railway, vehicular or pedestrian. The text includes the results of a number of tests, both laboratory and field, giving the strength at periods varying from one day to three months. The illustration shows a wide variety of installations where this type of cement was used, as well as views of field tests for full loading 24 hours after pouring.

AT THE CLOSE OF 1924 there were 132 bus lines operating from railroads in Colorado to towns off the lines. These buses are operated on regular schedules and carry baggage. A few of the buses are horse-drawn.

Railway Construction

CANADIAN PACIFIC.—This company, jointly with the Canadian National, is considering the proposal of Canadian government officials that they combine in constructing a railway line into the Peace River region of Alberta and British Columbia. The decision of the railways is expected within the next five weeks. Four routes are being considered. One extends from Entrance, Alta., on the Canadian National, to McLennan on the Edmonton, Dunvegan & British Columbia, with an outlet by way of the Canadian National to Vancouver, B. C. Another proposed route extends through the Peace River pass to Stewart, Alta., at the head of the Portland canal. Another extends through Pine Pass to Fort George and thence to Vancouver on the Pacific Great Eastern or to Prince Rupert on the Canadian National. The fourth proposed route lies through Pine Pass to Fort George and thence to either Ashcroft or Revelstoke on the Canadian Pacific.

CHICAGO & WESTERN INDIANA.—This company is applying to the Interstate Commerce Commission for authority to issue \$27,755,000 of bonds, the proceeds of which are to be used in the elevation of those portions of its tracks in Chicago which now cross streets at grade. According to the present plans which depend upon approval of the bond issue by the commission, the work of elevation will begin at Cottage Grove avenue and 94th street in Chicago and proceed first south to the city limits. The company expects to spend between \$3,000,000 and \$4,000,000 in 1925 on this project.

GRAND TRUNK.—This company is reported contemplating the relocation and double tracking of its line from Royal Oak, Mich., to Pontiac, a distance of 13 miles.

ILLINOIS CENTRAL.—This company plans the immediate construction of new repair shops at Paducah, Ky., to cost approximately \$6,000,000. The project will include a locomotive erecting shop, car repair shop, blacksmith shop, carpenter shop, wood mill and storeroom. Bids will be called for soon.

LONGVIEW, PORTLAND & NORTHERN.—This company is reported planning the construction of a passenger station at Longview, Wash.

MISSOURI-KANSAS-TEXAS.—This company, reported in the *Railway Age* of January 17 as contemplating the construction of an enginehouse and extensions to its yards at Ft. Worth, Tex., at a cost of \$1,000,000, has made some plans for the work, but has not yet authorized the project.

NEW YORK CENTRAL.—This company has applied to the New York Public Service Commission for an order directing the elimination of 12 grade crossings in Yonkers, N. Y., and 2 in Hastings, to cost approximately \$2,500,000. If the order is issued the railroad would pay half of the cost and the state and local governments the other half. The company is said to have requested this order as a preliminary to the electrification of its Putnam division.

PACIFIC ELECTRIC.—This company has been granted permission by the Railroad Commission of California to lower the level of its Glendale boulevard-Hill street tunnel in anticipation of a subway system project to cost \$500,000.

SAN BENITO & RIO GRANDE.—This company has awarded a contract to W. H. Nichols Company, Dallas, Tex., for the construction of a 15-mile extension from Santa Maria, Tex., to Hidalgo.

SOUTHERN.—This company has awarded a contract for the construction of a one-story addition to the passenger station at New Orleans, La., to cost \$62,000.

SOUTHERN PACIFIC.—This company plans the construction of a freight station at Eighth and Alameda streets in Los Angeles, Cal.

THE SOUTHERN PACIFIC has made arrangements with the state of Texas and an oil company to drill for oil along its right-of-way in the Wortham field of Texas and will use all the oil that it gathers on its own land for fuel in oil-burning locomotives.

Railway Financial News

ALTON & EASTERN.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire that part of the Chicago, Peoria & St. Louis from Grafton to East St. Louis, Ill.

BIRMINGHAM & SOUTHEASTERN RAILROAD.—*Acquisition.*—The Interstate Commerce Commission has authorized this company to acquire and operate a line from Union Springs to Eclectic, Ala., 46.89 miles, formerly owned by the Birmingham & Southeastern Railway; also to issue \$300,000 of common stock in connection with the purchase.

BONHOMIE & HATTIESBURG SOUTHERN.—*Acquisition.*—The Interstate Commerce Commission, on further hearing, has issued an amended certificate and order authorizing this company to acquire and operate a line from Beaumont to Hattiesburg, Miss., 25.95 miles, formerly owned by the Gulf, Mobile & Northern, on condition that the Mississippi Central be granted trackage rights from Beaumont to Hattiesburg over this line and from Beaumont to Mobile over the Gulf, Mobile & Northern on just and reasonable terms for not less than five years and that the route through Natchez be maintained.

The line in question had been leased from the Gulf, Mobile & Northern by the Mississippi Central which had also made a contract for trackage rights and a traffic arrangement for a route known as the Natchez route from Shreveport, La., to Mobile, Ala., before the line was later sold to lumber interests. Commissioner Aitchison dissented, on the ground that the commission cannot in this proceeding compel the Gulf to grant trackage rights to the Central, and the undesirability of transfer of control from an independent bona fide carrier to the principal shipper. Commissioners Campbell and McManamy joined in this dissent and Commissioner Hall also objected to turning this branch line over to "the brand-new creature of a lumber company."

BOSTON & MAINE.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for certificates authorizing the abandonment of its South Reading branch, from Wakefield Center to Peabody, Mass., 8 miles, and its Lawrence branch, from Danvers to North Andover, Mass., 15 miles.

BOSTON & MAINE.—*Receivership Asked.*—The latest development in the attempt to solve the problems of the Boston & Maine brought to a head by announcement of the so-called Loring Plan, occurred in Concord, N. H., on Wednesday, when a petition for the appointment of a receiver was filed in the United States district court. The petition was filed by Edward F. Brown, of Ipswich, Mass., president of the Boston & Maine Stockholders' Protective Association, who claims the membership of his association to be 3,500 stockholders owning 75,000 shares. The complaint urges that if protection of court is extended it is probable that the drastic abandonment and readjustment proposed in the Loring plan would prove unnecessary. It is alleged also that it would be impossible to carry out the proposed financial readjustments in time to assist in meeting 1925 maturities. Bonds in the amount of \$500,000 mature February 2, and on these complainant looks for default.

CENTRAL NEW ENGLAND.—*Abandonment.*—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of the lines between Shekomeko and Millerton, N. Y., 7.73 miles, and between Ancram lead mines and Boston Corners, N. Y., 5.97 miles.

CHICAGO & ALTON.—*Receivers' Notes.*—The Interstate Commerce Commission has authorized an issue of \$1,000,000 of 5½ per cent receivers' notes, to be sold at par and the proceeds used to pay the director general of railroads in settlement of claims and demands growing out of the period of federal control.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—*Lease.*—This company has applied to the Interstate Commerce Commission for authority to execute a joint supplemental lease between the Chicago & Western Indiana and its five proprietary tenant companies whereby the latter assume liability as lessees in respect of \$27,755,000 of

first and refunding mortgage bonds of the Chicago & Western Indiana and agree to pay as rental interest on the bonds at 5½ per cent, together with certain sinking fund payments.

CHICAGO, MILWAUKEE & ST. PAUL.—*To Inspect Property.*—President H. E. Byram in a statement made public on January 15 announced that a complete inspection of the property would be made by the firm of Coverdale & Colpitts before any further step is taken to meet the \$48,000,000 maturities due June 1. Mr. Byram added that the road is in first-class condition and the management and employees have with efficiency and loyalty cut down expenses.

ERIE.—*Lease.*—The general terms under which the Erie will be leased to the Nickel Plate were officially announced on January 16, and verify unofficial information previously reported. Under the plan adopted, the New Nickel Plate system will pay every year to the Erie corporation, on account of the stock outstanding and not converted to new Nickel Plate shares, an amount equal to the amount that such stock would receive if exchanged. The Erie corporation would then be able to pay out the money to the stockholders who had not exchanged these shares. Presuming \$6 dividends on the Nickel Plate common and preferred, this means that there will be paid to the Erie corporation \$3 for each share of first and second preferred and \$2.40 for each share of Erie common.

GREAT NORTHERN.—*Equipment Trust.*—This company has been authorized by the Interstate Commerce Commission to guaranty an issue of \$4,980,000 of Western Fruit Express Company equipment trust certificates.

GULF, MOBILE & NORTHERN.—*Bonds.*—The Interstate Commerce Commission has authorized this company to procure authentication and delivery of \$2,000,000 first mortgage bonds to be held subject to further order of the commission.

HOUSTON & TEXAS CENTRAL.—*Dividends Resumed.*—The directors have declared a \$6 dividend, \$3 payable January 10 and \$3 July 10, 1925. The last dividend paid on the common stock was \$3 in 1913. Of the \$10,000,000 capital stock \$9,998,500 is owned by the Southern Pacific, so that \$599,916 will accrue to the parent company during 1925 from this source.

KANSAS CITY SOUTHERN.—*Bonds.*—The Interstate Commerce Commission has authorized an issue of \$3,000,000 of refunding and improvement bonds, to be sold at not less than 86 to Ladenburg, Thalman & Co., of New York, to reimburse the treasury in part for expenditures for additions and betterments.

LEHIGH VALLEY.—*New Director.*—S. Brinkerhoff Thorne, of Thorne, Neale & Co., New York, has been elected a director and a member of the executive committee to fill the vacancy caused by the death of Daniel G. Reid.

LOUISIANA & PACIFIC.—*Abandonment.*—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of a branch line from De Ridder Junction to Longacre, La., 8.7 miles.

MISSOURI-KANSAS-TEXAS.—*To Redeem Notes.*—This company has called for redemption March 1 \$4,750,000 6 per cent notes, due March 1, 1930, and will pay for them out of treasury assets without any new financing.

MISSISSIPPI VALLEY.—*Acquisition.*—This company and the Illinois Central, which owns its capital stock, have applied to the Interstate Commerce Commission for authority for the acquisition of control by the Mississippi Valley of the Gulf & Ship Island by purchase of its stock for \$5,000,000, to be paid in notes at 4½ per cent, payable November 17, 1925. The stock is owned by Grace J. Stewart.

MONONGAHELA.—*Acquisition.*—The Interstate Commerce Commission has authorized the Scotts Run to issue \$1,000,000 of common stock to be used in payment for some railroad property acquired and has also authorized the Monongahela to acquire control of the Scotts Run by purchase of its stock and lease of its properties, including a line from Morgantown, W. Va., to a point on the boundary line between Pennsylvania and West Virginia and the ports located in West Virginia of an extension to Brave, Pa., 23.7 miles. The Scotts Run also owns the stock of the Monongahela & Ohio, which owns the Pennsylvania portion of the exten-

sion and the Monongahela was authorized also to acquire control of the latter by purchase of its stock.

MONONGAHELA CONNECTING.—Acquisition.—The Interstate Commerce Commission has authorized this company to acquire control of the Eastern Railroad by purchase of its stock.

MORGANTOWN & WHEELING.—Certificate Denied.—The Interstate Commerce Commission has denied this company's application for a certificate authorizing the construction of a line from Waynesburg to Blacksville, Pa., 14 miles, and the acquisition and operation of the properties of the Morgantown & Wheeling Railway and the Monongahela & Ohio.

NEW YORK, CHICAGO & ST. LOUIS.—Lease.—See Erie, item above.

NEW YORK, NEW HAVEN & HARTFORD.—Statement of Position.—In view of the statements recently appearing in the press to the effect that the New Haven proposes to abandon substantial portions of its mileage and that all of the railroads in the eastern group are asking for an increase in class rates, the New Haven has made the following statement, dated January 14:

"The policy of the New York, New Haven & Hartford Railroad with respect to the abandonment of mileage and to future rate structures has been set forth repeatedly since 1921.

"The New Haven System occupies a remarkable position in serving almost exclusively a populous territory, rich in industry and business. The average population per mile of all roads in the United States is about 409; in New Haven territory about 1,400 per mile. Relatively on this basis, the territory served by the New Haven is not over equipped with railroad mileage. As a matter of fact, careful study of the System, while disclosing numerous stretches of line which are not self-supporting, indicates there are but few and short stretches of mileage which are not a public necessity, and consequently cannot be considered for permanent abandonment.

"Based on the taxable valuation for 1920, the total value of all property, industrial, business and agricultural, in the territory served almost exclusively by the New Haven System approximates around \$5,500,000,000 to \$6,000,000,000. Further, the census reports for 1919 indicate a gross value per annum of manufactured and agricultural products alone in this territory of something over \$3,500,000,000, whereas the total revenues of the New Haven System for that year approximate but 3.2 per cent of that total.

"With adequate compensation from each class of service, together with efficiency and economy of operation, the additional net income required is so small compared to the above stated total income from business and industry, that there is no reason to doubt that the return allowed by the Transportation Act is possible without a restrictive rate basis for New England, or any action which would handicap New England industry the interest of which it is the purpose of the company to foster and promote by every practicable means, consistent with maintaining and developing a sound and satisfactory system of transportation. Obviously, therefore, reasonable revenues must result from each general class of traffic.

"For many years the class rates in the eastern group (the railroads east of the Mississippi and north of the Ohio and Potomac rivers) have been not only out of line with the rates in the southern and western groups, but also internally inconsistent and out of line. A study looking to a readjustment was ordered by the director-general during federal control, but had not been completed and put into effect when the railroads were returned to private ownership. This study has been continued since federal control, and a hearing has been ordered by the Interstate Commerce Commission to determine whether and to what extent rates within the Eastern group should be readjusted.

"Commenting upon the proceeding of investigation ordered by the Interstate Commerce Commission, Commissioner Joseph B. Eastman, under date of November 28, 1924, issued a circular from which the following is quoted:

"It will not be the primary purpose of the inquiry either to add to or subtract from the aggregate revenues of the carriers, but rather to adopt a class-rate structure which will be as simple as it can be made, with due regard for the public interest, and free from undue prejudice, and which will serve the purpose that class rates ought to serve. This does not mean, necessarily, that proposed rates will be rejected upon the ground that they increase or decrease aggregate revenues. Before the proceeding is closed it will be the purpose of the commission to determine revenue effect, as nearly as may be, by some form of traffic test. In appraising revenue effect, the intrastate rates will be taken into consideration, and evidence in regard to such rates will be freely admitted at the hearings, although they are not directly in issue. It is hoped to have the cooperation of the State Commission in the inquiry."

"From the foregoing it is apparent that the Interstate Commerce Commission aims to equalize inequalities and remove inconsistencies in the present rates of the eastern group and that shippers will have full opportunity to present to the commission cases where they believe that any proposed adjustment will create a restrictive rate basis for New England and handicap New England industry."

Industry Will Co-operate in Refunding.—Announcement has been made that committees composed of representatives of industries in New Haven territory have been formed to co-operate with the New Haven in insuring the success of the offering of \$23,000,000 of 6 per cent refunding bonds to be made to meet maturities of the so-called European loan on April 1. This loan was originally due in 1922 but was extended to 1925 and the interest rate increased from 4 to 7 per cent. The Rhode Island committee is headed by Henry D. Sharpe, of the Brown & Sharpe Manufacturing Company of Providence. The Manufacturers' Association of Connecticut, Inc., has issued a statement saying:

"The representatives of the industrial groups in Connecticut, Rhode Island and Massachusetts have felt that a large representation of industry among New Haven bondholders will strengthen and stabilize conditions throughout southern New England. This

view has been universally accepted since the co-operative plan of refinancing the New Haven was announced and it is generally regarded as having something to do with the considerable appreciation of the market values of New Haven securities during the last few weeks."

A circular of the association further says that investment in the bonds by the manufacturing and banking interests along the line would be a form of insurance for industry served by the railroad. "A financially weak New Haven is a menace to Connecticut industry," it adds. "Even should there be at any time a temporary depreciation in the market value of the bonds subscribed for, such a depreciation would be a small premium to pay for such transportation insurance."

PERE MARQUETTE.—Bonds.—This company has applied to the Interstate Commerce Commission for authority to issue and sell or pledge \$7,814,000 of 5 per cent first mortgage bonds to reimburse the treasury for expenditures for additions and betterments.

RIO GRANDE EASTERN.—Securities.—The Interstate Commerce Commission has authorized the issuance of \$100,000 of common stock and \$200,000 of first mortgage bonds, the proceeds to be used in acquiring the property of a construction company and to provide an initial operating fund.

RIO GRANDE EASTERN RAILWAY CORPORATION.—Acquisition and Operation.—The Interstate Commerce Commission has issued a certificate authorizing the acquisition and operation of a line from Algodones to Hagan, Tex., 12.6 miles, heretofore owned by the Rio Grande Eastern Railroad.

SEABOARD AIR LINE.—Equipment Trust.—The Interstate Commerce Commission has authorized an issue of \$3,390,000 of equipment trust certificates to be issued by the Bankers Trust Company, to be sold at 98.25 and also \$87,745 of deferred certificates to be sold at par.

ST. LOUIS, BROWNSVILLE & MEXICO.—Equipment Trust.—This company has been authorized by the Interstate Commerce Commission to assume, as assignee, obligation and liability in respect of \$1,740,000 of New Orleans, Texas & Mexico equipment trust certificates.

ST. LOUIS-SAN FRANCISCO.—Protests Valuation Figures.—An announcement was made on January 20 that this railway will protest the \$186,337,065 tentative valuation of the Interstate Commerce Commission. The statement follows in part:

The company will particularly protest against the price fixing and depreciation methods used by the commission in its findings.

Although the valuation was made as of June 30, 1918, the commission used pre-war prices in effect from 1909 to 1914 in determining the value of each piece of property or equipment, and further, they have depreciated the property from time of construction to date of valuation approximately \$40,000,000, although the property was greatly improved during this period, and has appreciated instead of depreciated in value. The depreciation arrived at in connection with equipment was in addition to the depreciation that the company had written off monthly, the commission's figures being over and above the depreciation that the company had set up on its books.

Since June 30, 1918, the valuation date, the additional investment in road and equipment amounts to over \$54,000,000, which sum must of course be added to the tentative valuations of the commission.

UINTAH.—Valuation.—The Interstate Commerce Commission has served a tentative valuation report in which it places the final value of the common carrier property of this company, for rate-making purposes, as of June 30, 1919, at \$1,010,200.

WEST CLARION.—Abandonment.—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of a line from Brockwayville to the West Clarion mines in Snyder township, Pa., 2.74 miles.

Dividends Declared

Bellefonte Central.—\$.50, annually, payable February 15 to holders of record, January 31.

Mine Hill & Schuylkill Haven.—\$1.25, payable February 2 to holders of record January 16.

Pullman Company.—\$2.00, quarterly, payable February 16 to holders of record January 31.

Trend of Railway Stock and Bond Prices

	Jan. 20	Last Week	Last Year
Average price of 20 representative railway stocks	80.61	82.25	61.71
Average price of 20 representative railway bonds	89.61	90.26	83.50

Railway Officers

Financial, Legal and Accounting

C. B. Carlton has been appointed auditor of joint facilities of the Southern, with headquarters at Washington, D. C.

Operating

H. P. Miller and **C. E. Iman** have been appointed assistant trainmasters on the Fort Wayne division of the Pennsylvania, with headquarters at Fort Wayne, Ind.

R. W. Prentice has been appointed trainmaster of the Plains division of the Atchison, Topeka & Santa Fe, with headquarters at Amarillo, Tex., succeeding H. C. Brock, deceased.

H. H. Wickett, train dispatcher for the Canadian Pacific, with headquarters at Edmonton, Alta., has been transferred to Medicine Hat, Alta., succeeding **E. A. Wheeler**, who succeeds Mr. Wickett at Edmonton.

J. Hewes, division engineer of the St. Louis division of the Baltimore & Ohio, with headquarters at Washington, Ind., has been promoted to assistant superintendent of the Akron division, with headquarters at Akron, Ohio.

R. A. Brimm, whose promotion to superintendent of the Little Rock division of the Missouri Pacific was reported in the *Railway Age* of November 29, was born on August 11, 1887, at Riddleton, Tenn. He entered railway service in November, 1906, in the operating department of the Mississippi Central. He was appointed a time-keeper on the Central of Georgia in August, 1907, and was promoted to accountant in September, 1910. Mr. Brimm was promoted to chief clerk to the superintendent in December, 1913. In 1918 he entered the service of the United States Army, in which he served until April, 1919, when he returned to the Central of Georgia as chief clerk to the superintendent. He was promoted to trainmaster in September, 1919, and to assistant superintendent of the Chattanooga division in July, 1922. Mr. Brimm entered the service of the Missouri Pacific as inspector of transportation in October, 1924. He held this position until his recent promotion to superintendent of the Little Rock division, with headquarters at McGehee, Ark.

W. J. Behmer, assistant trainmaster of the Logansport division of the Pennsylvania, with headquarters at Logansport, Ind., has been transferred to the Indianapolis division, with headquarters at Indianapolis, Ind., succeeding **B. H. Harris**, transferred.

J. H. McClintock, movement director in the office of the superintendent of freight transportation of the Central region of the Pennsylvania, with headquarters at Pittsburgh, Pa., has been promoted to assistant trainmaster of the Eastern division, with headquarters at Mansfield, Ohio.

C. E. Lytle, general superintendent of the Duluth, South Shore & Atlantic, with headquarters at Marquette, Mich., has been promoted to general manager, with headquarters at Min-

neapolis, Minn., succeeding **A. E. Wallace**, who continues as vice-president. The office of general superintendent has been abolished.

G. E. Johnson, assistant to the general manager of the Denver & Rio Grande Western, with headquarters at Denver, Colo., has been appointed acting superintendent of the Salt Lake division of the reorganized company, with headquarters at Salt Lake City, Utah, succeeding **J. T. Slattery**, who has retired on pension. **R. K. Bradford**, operating assistant to the receiver, has been appointed assistant to the general manager, with headquarters at Denver, Colo., succeeding Mr. Johnson.

A. J. Worthman, superintendent of the Wyoming division of the Chicago & North Western, with headquarters at Casper, Wyo., has been appointed acting superintendent of the Madison division, with headquarters at Baraboo, Wis., succeeding **W. A. Hayes**, who has been granted leave of absence on account of ill health. **W. F. Carroll**, assistant superintendent of the Iowa division, with headquarters at Boone, Iowa, has been promoted to acting superintendent of the Wyoming division, succeeding Mr. Worthman. **E. L. Henry**, trainmaster of the Iowa division, with headquarters at Ames, Iowa, has been promoted to assistant superintendent of the Iowa division, succeeding Mr. Carroll. **H. R. Koch** has been appointed acting trainmaster of the Iowa division, succeeding Mr. Henry.

S. S. Long, whose promotion to superintendent of the Black Hills division of the Chicago & North Western, with headquarters at Chadron, Nebr., was reported in the *Railway Age* of December 6, 1924, was born on October 17, 1882, at Mason City, Iowa. Mr. Long completed the first two years of the course in civil engineering at the University of Wisconsin in 1904. Previously he had entered railway service in June, 1899, as a chainman on location surveys of the Chicago & North Western. In 1904 he re-entered the service of the North Western on location, construction and maintenance work in Wisconsin in the capacities of rodman, instrumentman and assistant engineer. He was promoted to division engineer of the Ashland division in 1909 and in 1912 was transferred to the Madison division. Mr. Long was transferred to the Wisconsin division, with headquarters at Chicago, in 1913, and held that position until 1918, when he was promoted to assistant superintendent of the Minnesota division, with headquarters at Winona, Minn. He continued in that capacity until his recent promotion to superintendent of the Black Hills division.

R. B. Croll, superintendent of car service of the Chicago Great Western, with headquarters at Chicago, has been promoted to superintendent of transportation, with the same headquarters, a newly created position, and the office of superintendent of car service has been abolished. Mr. Croll was born on April 17, 1886, at Frankfort, Ind., and attended the University of Indiana. He entered railway service in September, 1905, as a clerk in the office of the superintendent of car service of the Toledo, St. Louis & Western, and was promoted to chief clerk several years later. He was appointed superintendent of car service of the Ft. Smith & Western, with headquarters at Ft. Smith, Ark., in November, 1916, and in September, 1917, was promoted to superintendent of both the operating and car service departments. Mr. Croll entered the service of the Chicago Great Western in December, 1921, as a transportation inspector, with headquarters at Chicago, and held that position until February 1, 1923, when he was promoted to superintendent of car service. He remained in that position until his recent promotion to superintendent of transportation.

Traffic

J. I. Houston and **C. D. Arnold** have been appointed assistant general freight agents of the Southern Pacific, with headquarters at Houston, Tex.

J. J. Grogan, general agent of the El Paso & Southwestern, with headquarters at Chicago, has been appointed district freight agent of the Southern Pacific, with the same headquarters, a newly created position.



R. A. Brimm

W. S. Evans has been appointed commercial agent of the Atlantic Coast Line, with headquarters at St. Petersburg, Fla., succeeding C. J. Carty, who has resigned.

H. S. Lemmon, commercial agent of the Southern, with headquarters at Memphis, Tenn., will retire on February 1, after 34 years of service with the Southern.

J. E. Anderson, division freight agent of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Cleveland, Ohio, has been promoted to assistant general freight agent, with the same headquarters, a newly created position.

J. L. Fielding, chief rate clerk on the Southern Pacific, with headquarters at Los Angeles, Cal., has been promoted to assistant general freight agent, with headquarters at El Paso, Tex., a newly created position.

M. E. Harlan, special passenger traffic representative of the Northern Pacific, with headquarters at St. Paul, Minn., has been promoted to general agent, passenger department, with headquarters at Chicago, a newly created position.

Edward Clemens, assistant to the general manager of the Terminal Railroad Association of St. Louis, has been promoted to traffic manager, with headquarters at St. Louis, Mo., succeeding W. C. Stith, whose death on December 22 was reported in the *Railway Age* of January 10. Mr. Clemens was born on September 28, 1884, at Eureka, Mo. He entered railway service in March, 1901, as a messenger in the freight department of the Terminal Railroad Association of St. Louis, and was later promoted to clerk and accountant. He was promoted to chief of the tariff bureau and chief clerk in the traffic department in September, 1905, and held that position until February, 1916, when he was promoted to chief clerk to the general manager. Mr. Clemens was promoted to superintendent of car service in May, 1918, and held that position until the beginning of federal control in July, 1918, when he was promoted to assistant to the federal manager. With the return of the railroads to private operation in March, 1920, he was re-appointed superintendent of car service and held that position until June, 1920, when he was promoted to assistant to the general manager. Mr. Clemens continued in that capacity until his recent promotion to traffic manager.

C. C. Gardner, general agent, passenger department, of the Chicago, Rock Island & Pacific, with headquarters at Des Moines, Iowa, has been promoted to assistant general passenger agent, with the same headquarters, a newly created position.

T. P. Hinchcliff, general agent of the Chicago, Burlington & Quincy, with headquarters at Detroit, Mich., has been promoted to assistant general passenger agent, with headquarters at Chicago, succeeding F. E. Bell, who has retired on account of ill health.

W. L. Wright, assistant foreign freight agent of the Canadian Pacific, with headquarters at Vancouver, B. C., has been promoted to division freight agent of the British Columbia Coast Steamship Service, with the same headquarters, succeeding J. G. McNab, who has been transferred.

F. G. Ocasek has been appointed division freight agent of the Chicago, Indianapolis & Louisville, with headquarters at Chicago, succeeding C. R. Boak, who has resigned to engage

in other business. **H. E. Hansen** and **H. J. Thuller** have been appointed commercial agents, with headquarters at Chicago.

C. E. Sweet, city passenger agent of the Chicago & Alton, with headquarters at Chicago, has been promoted to district passenger agent, with headquarters at Milwaukee, Wis. **T. B. Peake**, city passenger agent, with headquarters at Kansas City, Mo., has been promoted to district passenger agent, with the same headquarters.

W. H. Garratt, whose promotion to general freight agent of the Union Pacific System, with headquarters at Omaha, Nebr., was reported in the *Railway Age* of January 17, was born on February 21, 1857, at London, Ont. He entered railway service in April, 1873, on the Detroit & Milwaukee, later the Detroit Grand Haven & Milwaukee, and now a part of the Grand Trunk Western, at Detroit, Mich. In 1882 he entered the service of the Chicago, Milwaukee & St. Paul as chief clerk in the freight claim department. He was employed in the traffic department of the Missouri Pacific in January, 1884, and was later promoted to division freight agent, with headquarters at Atchison, Kans.

Mr. Garratt entered the service of the Union Pacific in December, 1888, in the freight department at Omaha, Nebr. He was promoted to assistant general freight agent, with headquarters at Omaha, in June, 1898, and held that position until his recent promotion to general freight agent, with the same headquarters.



W. H. Garratt



Edward Clemens

W. J. Lahr, who has been promoted to the newly created position of assistant general freight agent of the Illinois-Iowa district of the Chicago, Burlington & Quincy, with headquarters at Chicago, was born on November 11, 1884, at Evansville, Ind., and entered railway service in July, 1902, as a yard clerk on the Louisville & Nashville at Howell, Ind. In March, 1904, he was promoted to clerk in the office of the supervisor of bridges and buildings where he remained until January, 1907, when he was appointed a stenographer in the office of the general manager of the Chicago, Rock Island & Pacific, in Chicago. He was transferred to El Reno, Okla., in March, 1908, and in November of the same year was promoted to secretary to the general manager at El Reno. In December, 1909, Mr. Lahr was appointed secretary to the general manager at Chicago, which position he held until February, 1912, when he was promoted to secretary to the vice-president and general manager of the Chicago, Rock Island & Gulf at Fort Worth, Tex. He was appointed secretary to the president of the Chicago, Burlington & Quincy in September, 1912, where he remained until July, 1918, when he was appointed executive chief clerk to the regional director of the central western region. Upon the return of the railroads to



W. J. Lahr

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private management in March, 1920, Mr. Lahr was appointed chief clerk to the vice-president in charge of traffic of the Chicago, Burlington & Quincy, in which position he remained until his recent promotion to assistant general freight agent.

R. J. Tozer, assistant general passenger agent of the Northern Pacific, with headquarters at Chicago, has been appointed general agent, with headquarters at Shanghai, China, in charge of a newly established agency. He will supervise the solicitation of freight and passenger traffic for the Northern Pacific in China, Japan, the Philippine Islands and other parts of the Orient.

L. W. Bade, division passenger agent of the Wabash, with headquarters at Chicago, has been promoted to assistant general passenger agent, with headquarters at St. Louis, Mo., a newly created position. **H. E. Dixon** has been appointed division passenger agent, with headquarters at Chicago, succeeding Mr. Bade. **T. G. Smith**, traveling freight agent, with headquarters at St. Louis, Mo., has been promoted to general agent, freight department, with headquarters at Little Rock, Ark., in charge of a newly established freight agency. **W. D. Wood**, traveling passenger agent, with headquarters at St. Louis, Mo., has been promoted to district passenger agent, with headquarters at Little Rock, Ark., in charge of a newly established passenger agency.

T. L. Cochrane, district freight agent, with headquarters at St. Thomas, Ont., has been promoted to general agent, freight department, with headquarters at Toronto, Ont., in charge of a newly established agency. Mr. Bade was born on January 14, 1889, at Chicago, Ill., and entered railway service in 1902 as an office boy in the traffic department of the Wabash. He was later promoted to stenographer and ticket seller and subsequently to passenger agent. Mr. Bade was then promoted to division passenger agent, with headquarters at Chicago, and held that position until his recent promotion to assistant general passenger agent, with headquarters at St. Louis, Mo.

E. G. Baker, district passenger agent of the St. Louis-San Francisco, with headquarters at Chicago, has been appointed division passenger agent, with headquarters at St. Louis, Mo., succeeding **F. J. Deicke**, who has retired. **E. H. Jordan** has been appointed district passenger agent, with headquarters at Chicago, succeeding Mr. Baker.

J. C. Gutsch, assistant general freight agent of the Chicago, Rock Island & Pacific, with headquarters at Chicago, has been promoted to assistant to the freight traffic manager, with the same headquarters, a newly created position. **F. A. Adams**, assistant general freight agent, with headquarters at Chicago, has also been promoted to assistant to the freight traffic manager, with the same headquarters.

N. W. Pringle, general passenger agent of the Lehigh Valley, with headquarters at New York, has been promoted to passenger traffic manager, with the same headquarters, a newly created position. **C. A. Barber**, assistant general passenger agent, with headquarters at New York, has been promoted to general passenger agent, also with headquarters at New York, succeeding Mr. Pringle. **S. W. Gafner** has been appointed assistant general passenger agent, with headquarters at Buffalo, N. Y.

D. C. Odell, whose promotion to assistant general freight agent of the Cincinnati, Indianapolis & Western, with headquarters at Springfield, Ill., was reported in the *Railway Age* of December

20, was born on March 20, 1879, at Enfield, Ill. After graduating from the Southern Illinois Normal College, he entered railway service in November, 1897, as a telegraph operator on the Baltimore & Ohio. Two years later he was promoted to cashier at Springfield, Ill., and in 1901 was promoted to chief clerk in the division freight office. In September, 1904, he was promoted to traveling freight agent. Mr. Odell entered the service of the Cincinnati, Indianapolis & Western in December, 1913, as general agent, with headquarters at Springfield, Ill. He was later promoted to division freight agent, with the same headquarters, and held that position until his recent promotion to assistant general freight agent.

Edward D. Osterhout, general passenger agent of the Reading, with headquarters at Philadelphia, Pa., has been promoted to passenger traffic manager, with the same headquarters, succeeding **Edwin L. Lewis**, whose death on December 31 was announced in the *Railway Age* of January 10. **J. Sidman Selby**, assistant general passenger agent, with headquarters at Philadelphia, has been promoted to general passenger agent, succeeding Mr. Osterhout. A photograph and biographical sketch of Mr. Selby appeared in the *Railway Age* of June 21, 1924, page 180. **Charles C. Williams**, district passenger agent at Philadelphia, has been promoted to assistant general passenger agent, succeeding Mr. Selby. **John F. Buch**, district passenger agent at Atlantic City, N. J., has been transferred to Philadelphia, in the same capacity, succeeding Mr. Williams. **Charles F. Osman** has been appointed district passenger agent at Atlantic City, succeeding Mr. Buch.

Julien L. Eysmans, whose promotion to general traffic manager of the Pennsylvania System, with headquarters at Philadelphia, Pa., was announced in the *Railway Age* of January 3, was born in Brussels, Belgium, on March 18, 1874. Having come to this country, he was educated in the public schools of Baltimore, Md. He entered the service of the Pennsylvania on May 1, 1891, as a messenger in the office of the division freight agent at Baltimore and on October 1, 1893, he became a clerk at Washington, D. C., returning a year later to Baltimore, in the same capacity. On August 1, 1896, he was promoted to freight solicitor at Baltimore and on April 15, 1898, he was appointed also agent of

the Anchor Line. He was transferred to Reading, Pa., as freight solicitor, on March 26, 1900, and was appointed district freight solicitor at Baltimore on March 9, 1903. Mr. Eysmans was appointed eastern superintendent of the Star Union Line at New York on January 1, 1904, and on February 28, 1906, he was promoted to general freight agent of the Cumberland Valley, a part of the Pennsylvania. He was appointed division freight agent of the Pennsylvania at Pittsburgh, Pa., on June 1, 1911, and on May 8, 1912, he was promoted to assistant general freight agent at Philadelphia. On May 1, 1916, he was promoted to general freight agent and at the termination of federal control on March 1, 1920, Mr. Eysmans was promoted to traffic manager of the Eastern region, being transferred to the Central region at Pittsburgh in the same capacity, on October 24, 1923. On July 1, 1924, Mr. Eysmans was promoted to the newly created position of assistant general traffic manager, the position he held at the time of his recent promotion to general traffic manager.

Anders Petersen, whose promotion to general livestock agent of the Chicago, Rock Island & Gulf, with headquarters at Fort Worth, Tex., was reported in the *Railway Age* of January 17, was born on August 12, 1878, at Cedar Rapids,



L. W. Bade



J. L. Eysmans

Iowa. He entered railway service in October, 1892, in the local office of the Chicago, Rock Island & Pacific at Council Bluffs, Iowa, and in January, 1903, was promoted to O. S. and D. clerk at Kansas City, Mo. He was promoted to warehouse foreman in October, 1903, and held that position until September, 1910, when he was promoted to assistant agent at Fort Worth, Tex. Mr. Petersen was promoted to agent at North Fort Worth, Tex., in 1911 and was subsequently promoted to general agent, traffic department at Amarillo, Tex. He was promoted to assistant general livestock agent, with headquarters at Kansas City, Mo., in June, 1922, and held that position until his recent promotion to general livestock agent.

W. G. Wagner, whose promotion to assistant freight traffic manager of the Chicago, Burlington & Quincy, with headquarters at Chicago, was reported in the *Railway Age* of January 17, was born on May 26, 1866, at Constantine, Mich. He entered railway service in 1883 as a messenger in the employ of the Chicago, Burlington & Quincy and subsequently served as baggage master, operator and agent at various stations on the Creston division. He was promoted to freight agent at Burlington, Iowa, in April, 1901, and in July, 1904, was promoted to commercial agent, with headquarters at Des Moines, Iowa. Mr. Wagner was promoted to division freight agent, with headquarters at Burlington, Iowa, in 1907, and continued in that position until December, 1912, when he was promoted to assistant general freight agent, with headquarters at Chicago. He was promoted to general freight agent on March 1, 1920, and held that position until his recent promotion to assistant freight traffic manager.

Mechanical

L. C. Hensel has been appointed chief electrician of the Chicago & Alton, with headquarters at Bloomington, Ill., succeeding S. W. Detrich, who has resigned.

George E. Dougherty has been appointed master mechanic of the Buffalo division of the Delaware, Lackawanna & Western, with headquarters at East Buffalo, N. Y.

K. F. Nystrom, engineer of car design of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, has been promoted to engineer of motive power and rolling stock, with the same headquarters, a newly created position. Mr. Nystrom was born in Sweden in September, 1881, and graduated from a university in that country in 1904 as a mechanical engineer. He came to the United States in November, 1905, and was employed as a draftsman by the Pressed Steel Car Company in 1906. In February, 1909, he was employed by the engineering department of the Pullman Company, which he left in September of that year to enter the service of the Southern Pacific. He was appointed assistant mechanical engineer of the American Car & Foundry Company in June, 1911, and in July, 1912, was appointed mechanical engineer of the Acme Supply Company of Chicago. Mr. Nystrom re-entered railway service in September, 1913, when he was appointed chief draftsman in the car department of the Grand Trunk at Montreal, Que. He was appointed chief draftsman on the Canadian Pacific in November, 1918, returning to the Grand Trunk in January, 1920, to become engineer of car construction. Mr. Nystrom entered the service of the Chicago, Milwaukee & St. Paul in January, 1922, as engineer of car design, which position he held until



K. F. Nystrom

his recent promotion to engineer of motive power and rolling stock.

H. W. Williams, whose promotion to superintendent of motive power of the Chicago, Milwaukee & St. Paul, Lines West, with headquarters at Seattle, Wash., was reported in the *Railway Age* of January 17, graduated from Purdue University in June, 1910, and after one year as an instrument-man on the Chicago Junction, entered the service of the Chicago, Milwaukee & St. Paul as a draftsman in the office of the engineer of design. He was transferred to the construction forces at Lewistown, Mont., in December, 1913, and in March, 1914, was promoted to structural draftsman in the electrification department. Mr. Williams was promoted to chief draftsman in January, 1915, and to assistant engineer in 1917. He was appointed special representative to the general superintendent of motive power in November, 1920, which position he held until his recent promotion to superintendent of motive power of the lines west.

Obituary

J. M. Rapelje, vice-president in charge of maintenance and operation of the Northern Pacific, with headquarters at St. Paul, Minn., died in that city on January 20, following an operation for appendicitis. Mr. Rapelje was born at Chippewa, Ontario, on January 22, 1857. He began railway work in August, 1879, as a brakeman on the Grand Trunk and shortly thereafter became a fireman on the Atchison, Topeka & Santa Fe. From May, 1882, to November, 1887, he was a conductor on the Canadian Pacific and then, until 1898, was a conductor on the Yellowstone division of the Northern Pacific. He was later appointed trainmaster and subsequently served as a conductor until June, 1902, when he was reappointed trainmaster of that division. From April, 1905, to July, 1908, he was superintendent of the same division and, from the latter date to May, 1910, was superintendent of the Rocky Mountain division. He was then transferred to the Idaho division, where he remained until 1912, when he was appointed general superintendent of the lines from Mandan, N. D., to Paradise, Mont. In May, 1914, he was promoted to assistant general manager, with headquarters at St. Paul, and in October of the same year, to general manager of the lines east of Paradise. For a time in 1918, Mr. Rapelje served as acting vice-president and during the latter part of 1921, he was elected vice-president in charge of maintenance and operation, which position he held at the time of his death.

W. L. Martin, formerly vice-president of the Minneapolis, St. Paul & Sault Ste. Marie, whose death on January 13 was reported in the *Railway Age* of January 17, was born on November 15, 1854, in Lee county, Ill. He graduated from Northwestern University in 1874 and entered railway service in 1886 as chief clerk to the general manager of the Minneapolis, Sault Ste. Marie & Atlantic, now the Minneapolis, St. Paul & Sault Ste. Marie. He was elected secretary and treasurer in November, 1890, and in July, 1892, was appointed assistant general freight agent. Mr. Martin was promoted to general freight agent in August, 1892, and held that position until February, 1903, when he was promoted to freight traffic manager. He was elected vice-president in charge of traffic in August, 1905, where he remained until his retirement from active service in January, 1923.



J. M. Rapelje